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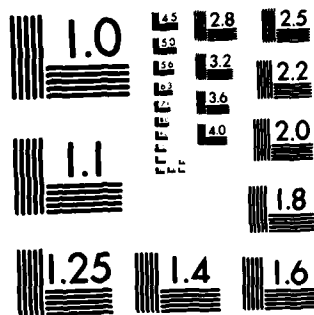
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TECHNICAL REPORT P-86/08
July 1986

Family Housing Self-Help Evaluation and Improvement

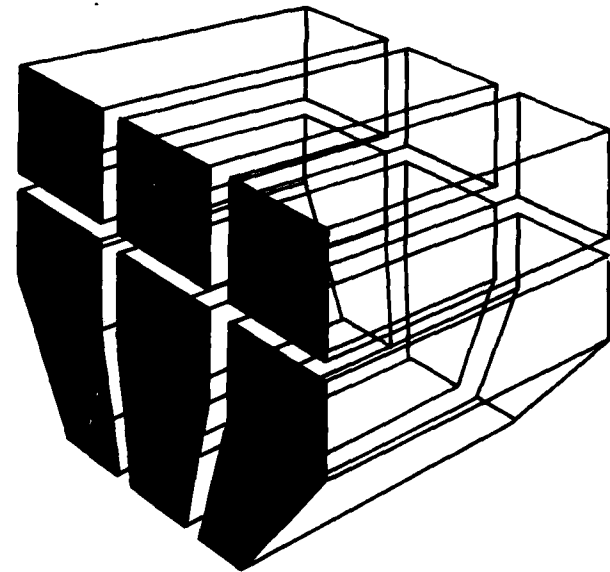
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Family Housing Self-Help Program: Evaluation and Recommendations for Improvements

by
John H. Williamson
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This report evaluates the Army Family Housing Self-Help Program, discusses problems with the program, and recommends solutions to the problems. The evaluation describes existing self-help documentation and current operating procedures, analyzes attitudes of family housing occupants and providers of family housing toward the program, and gives a cost/benefit analysis of self-help vs. preventive maintenance. The data obtained showed that both occupants and installation personnel favored the program and that self-help is more economical than contracted maintenance. Based on results of the analyses, recommendations are given for improving existing self-help methods and procedures in areas of organization, operations, training, and documentation.

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the analyses, recommendations are given for improving existing self-help methods and procedures in areas of organization, operations, training, and documentation.

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FOREWORD

This research was conducted for the Army Housing Management Division, Facilities Branch, Office of the Chief of Engineers (OCE), under reimbursable Work Unit QH5, "Family Housing Self-Help Evaluation and Improvement." The work was performed by the Facility Systems Division (FS) U.S. Army Construction Engineering Research Laboratory (USA-CERL). The OCE Technical Monitors were Mr. Alex Houtzager, DAEN-ZCH-F, and Mr. Helmut Granberg, DAEN-ZCF-B.

Mr. E. A. Lotz is Chief of USA-CERL-FS. COL Paul J. Theuer is Commander and Director of USA-CERL, and Dr. L. R. Shaffer is Technical Director.



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FAMILY HOUSING SELF-HELP PROGRAM: EVALUATION AND RECOMMENDATIONS FOR IMPROVEMENTS

1 INTRODUCTION

Background

The Army's Family Housing (FH) has high visibility since it is a separate budget item that is reviewed closely by Congress. The quality of housing has drawn a great deal of attention in recent years, since it has a major impact on soldier morale. To improve housing quality, the Army has implemented a Self-Help (SH) Program to save money, improve the quality of housing, and instill pride of residency. This program involves having the installations provide training and materials to FH occupants so that they can perform simple housing maintenance tasks themselves, thereby saving a significant amount of money in contracted maintenance and repair. However, the SH Program has recently been criticized as being outdated, inefficient, and ineffective; for example, a General Accounting Office (GAO) review of occupant responsibilities was critical of the program. Therefore, the Facilities Branch of the Army Housing Management Division asked the U.S. Army Construction Engineering Research Laboratory (USA-CERL) to comprehensively evaluate and recommend improvements to the current SH Program.

Objective

The objective of this report is to present the results of an investigation of the Army SH Program and to recommend improvements to existing methods and procedures.

Approach

A multiphased approach was used to provide an in-depth analysis of the SH Program. FH occupants, civilian property managers, and Directorate of Engineering and Housing (DEH) personnel were surveyed by questionnaires, site visits, and telephone to obtain direct user input about the current program. Department of the Army (DA) and Major Command (MACOM) documentation providing SH guidance was evaluated. The data obtained were analyzed and used to make cost-benefit comparisons of the SH Program vs. preventive maintenance (PM). Based on the user responses and the economic analyses, recommendations were made for improving the program.

Mode of Technology Transfer

It is recommended that the operational procedures and organizational structure described in this report be provided to DEH for implementation. It is further recommended that the information be used to update DA PAM 210-2, *Handbook for Family Housing Occupants*. After successful evaluation of the operational and organizational recommendations, the information may also be used to revise Army Regulation (AR) 420-22, *Preventive Maintenance and Self-Help* and Technical Bulletin (TB) ENG 402, *Self-Help Program*.

2 DATA COLLECTION AND ANALYSIS

Program evaluations and recommendations were based on intensive data collection. Information was gathered by (1) telephone interviews with SH personnel at nine predesignated Continental United States (CONUS) installations, (2) in-depth site visits to four installations, (3) telephone interviews with civilian property managers, and (4) questionnaires completed by FH occupants and DEH employees. The information obtained was used to establish a baseline for comparison and evaluation.

Data Collection

Telephone Interviews With Installation Personnel

Telephone interviews with SH personnel at nine CONUS installations were used to obtain baseline data and to help determine which installations would be visited for in-depth evaluations. The persons usually interviewed were the SH coordinators, SH service center managers, PM shop foremen, and budget analysts. The SH coordinator provided information about the overall program, including the interaction between the SH and PM programs, general attitude toward the SH Program, mechanics of the occupant SH training, and cost-reporting procedures. SH service center managers provided detailed information about daily operations, including recording of inventory items issued, inventory control, reports, training programs, actual participation, and the level of satisfaction and cooperation. PM foremen were interviewed to obtain information about overlaps between the SH and PM programs, policy directing PM team members to inform occupants of their responsibilities, and incidence of the need to rework SH tasks incorrectly completed by occupants. Budget analysts provided information on determining of the SH budget and tracking actual costs.

Site Visits

Information gathered from the telephone interviews was used to determine which of the nine CONUS installations would be visited to obtain more in-depth information. Three sites were chosen: one with an extensive SH Program, one with an intermediate program, and one with a contracted SH Program. Fort Hood, TX, was chosen for the contracted repair and maintenance program category. The other two sites were selected based on the following criteria: a standard training program, little overlap between SH and PM, and use of the Facility Engineers Supply System (FESS) for recordkeeping and inventory control. These criteria were established primarily as a means to facilitate analysis of the site visit data and to enable more information to be gathered. Based on these criteria, Fort Dix, NJ, and Fort Campbell, KY, were chosen for analysis of the extensive and intermediate programs, respectively. In addition, Fort Lee was visited by special invitation from DEH because evaluation of the present program would provide a good baseline for comparison to the prototype program scheduled for implementation in FY86.

At each site, personnel associated with the following DEH activities were interviewed: FH, budgeting, supply, Management Engineering Systems Branch (MESB), PM, and repair and maintenance. Where a Commercial Activities (CA) contract existed, personnel involved with the quality assurance evaluation of the contracted maintenance were also interviewed. The site visits provided a great deal of detailed information. They also gave researchers first-hand impressions and subjective evaluations that contributed to understanding of the less codifiable issues underlying implementation of a successful program.

Telephone Interviews With Civilian Residential Property Managers

Telephone interviews with civilian property managers provided information about the advisability of using occupant participation in home maintenance. This information was used to determine if any program similar to the Army SH Program was currently in use or had previously been attempted in the private sector. To ensure a fairly representative sampling, two property managers were interviewed in each of the following cities: Chicago, Dallas, San Francisco, and Washington, D.C. Most managers interviewed worked primarily with apartment rentals, with responsibility for several hundred to several thousand units. These conversations provided valuable, objective opinions regarding the feasibility of the SH concept.

DEH and FH Occupant Questionnaires

The DEH and FH occupant questionnaires obtained the opinions of people directly involved with the SH Program. The questionnaires were administered at 12 installations and were aimed at gathering not only facts on the operation of the SH Program but also perceptions of and opinions about the program. Appendix A provides copies of the questionnaires. Thirteen hundred and fifty FH occupant questionnaires and 89 DEH questionnaires were completed and returned for analysis.

Results of Data Analysis

Telephone Interviews and Site Visits

Information gathered from the telephone interviews and site visits involved all areas of the SH Program.

Training. FH occupant training is conducted at almost all installations, but the frequency of the training depends on the installation, ranging from twice a week to once a month. Except where lack of space is a problem, training is usually conducted at the Self-Help Service Center (SHSC), and class length ranges from 1 to 3 hours. Examination of available course outlines indicates that the course content is about the same across all installations, although emphasis or the depth of coverage of a given topic may differ. In most cases, demonstrations are used rather than strictly verbal or textbook instruction. Service members are required to attend training, and their spouses often attend also. Trainees need not demonstrate any minimum level of competence at the end of the course. Training and Doctrine Command (TRADOC) installations have the trainees complete an SH training evaluation form at the end of course.

Self-Help Service Center. The SHSC is usually located in the center of the installation, which may not be near the housing areas. In some cases, it is located in the supply warehouse. The hours of operation are usually "normal" workhours (about 9:00 A.M. to 4:30 P.M.) during the week and several hours during the weekend. In some cases, regulations require the SHSC to be open for a given number of hours on weekends. The Service Center also houses the demonstration mockups used in the training course, thus making them available for reference at all times, except where prevented by space constraints. In almost all cases, the occupant must have proof of training in order to be issued any supplies for SH tasks. Inventory control is usually done by computers, but some installations still use the Army inventory control method. Also, some installations use computers to handle cost reporting while others rely on the use of DD Form 1150 to report and collect cost data. The type of inventory control used affects costs of the SH Program.

Budgeting. The SH Program budget is usually determined by the program directors, who use historical costs to project the operating funds needed for the coming year.

Cost Accounting. FESS, the Integrated Facilities System (IFS), or the Standard Army Finance System (STANFINS) are used to account for the costs incurred by the SH Program. The SH account falls under the 1920 account for FH. Materials issued to the SHSC are applied to a Standing Operations Order (SOO) under a phase code for FH.

Management and Organization. There appears to be no consistent organizational structure for managing the SH Program. At some installations, program management is the responsibility of the Housing Division; at others, it falls under the jurisdiction of the PM Branch of the Buildings and Grounds Division. Analysis of operations indicates that management by the PM Division is the most appropriate method. In addition, observations made during site visits seem to indicate that the SH Program should remain part of the installation operations when maintenance is contracted. If possible, service order (SO) processing should not be contracted and should be monitored so that SH projects are not performed by PM crews. More detailed investigation is needed in this area before final recommendations can be made.

Support. Management or command attitude appears to play an important role in the success or failure of a given SH Program. This is based on a review of two different documents dealing with SH Program analysis. Where attitude toward the SH Program is favorable, there have been very good results. Thus, it appears that a command decision to improve the SH Program will be necessary for it to provide the desired benefits.

Interviews With Civilian Property Managers

The telephone interviews with civilian residential property managers showed that very few large-scale SH-type programs are being used in the private sector. However, there are some agreements between single-family home renters and individual landlords that would be similar to an SH Program.

Most of the people interviewed did not favor implementing this type of program. However, one manager felt that an SH-type program was a "thing of the future" and that these programs would eventually be implemented in numerous apartment complexes and other housing situations even though there is considerable concern about an occupant's ability to perform SH repair tasks properly and efficiently. Most felt that it would not prove to be a cost-effective method for completing maintenance and repair tasks, although there is some evidence that commercial providers of housing may gain tax advantages from occupant-performed maintenance programs. Other often-raised questions concerned the manner in which supplies would be dispensed and the resolution of disagreements over whether a task really needs to be completed.

FH Occupant Questionnaires

The first part of the FH occupant questionnaire established background information. Analysis shows that most occupants have lived in their present quarters for 2 years or less and have never owned a home. The most common reasons for living in Army housing were economic considerations and convenience. Most (92 percent) of the occupants surveyed indicated they enjoyed doing repairs or working with their hands. Ages of the respondents ranged from 19 to 54; most had at least some college education, and 62 percent had a rank of E5 to E9. Also, 77 percent of the respondents indicated they wanted to make the Army their career, while 15 percent were uncertain. It is thought that improved housing conditions may be a factor in helping retain Army enlisted personnel.

Almost all (99.5 percent) of the FH occupants were aware there was an SH Program at their current installation. When asked to compare programs at various installations, most of those who had participated in the programs felt that all of them were very similar. Overall impressions of the program, both at specific installations and in general, indicated that more than 95 percent of the occupants believed the program should either remain the same or be expanded. Most occupants were aware that saving Army housing money, increasing quality of housing, and instilling a pride of residency were all goals of the SH Program.

About 9 percent of the occupants surveyed stated that they did not participate in the SH Program; slightly more than half attributed this to lack of time. In 91 percent of the households, the service member performed the SH tasks and in 70 percent of the households, the service member's spouse also performed them. Yard work appeared to be done most frequently, followed by hardware, plumbing, carpentry, electrical, and painting tasks, respectively. Almost 90 percent of the occupants felt their installation encouraged participation in the program, and 73 percent believed recognition or award programs encouraged participation; 89 percent stated that their installations currently had a recognition or award program for outstanding quarters.

In-processing presentations appeared to be the most frequently used method of providing information on the SH Program, followed by pamphlets, letters, and the SH training class. Almost 85 percent of the respondents knew what type of SH work is allowed, while more than 90 percent knew where to obtain supplies, whether identification is required to obtain supplies, and where they could get answers to questions related to the SH Program. Although about 85 percent of the occupants stated they were aware of the difference between SH and PM, 69 percent indicated that if they decided not to perform a routine SH task, a PM team would do it at their request. Similarly, while almost 27 percent of the occupants had never made such a request, 48 percent of those who had done so stated they had never been told that the task should be done by SH.

Almost 25 percent of the occupants indicated that SH training was not provided at their installations. Of those who were provided training, 60 percent stated that training was available upon arrival, and 40 percent stated that training was available periodically. Only 16 percent of the occupants said they were tested after completing training, while 79 percent indicated they were required to complete training before they could obtain supplies. Eighty-six percent of the respondents indicated that training was available to all family members; however, almost 20 percent of these respondents felt that training was not scheduled at a convenient time and place for family members to attend. About 27 percent of the respondents who had training available to them felt the training was inadequate. The most frequent reasons appeared to be that they felt training was too brief (75 percent) and too simple (40 percent). (Analysis indicated that those who thought training was too simple were generally people with a college or graduate degree.)

Guidance on housing responsibilities was provided to occupants either by training and written information (39 percent) or by written guidance alone (46 percent). Almost 40 percent of the respondents were never provided any information specifying the difference between damage and normal wear and tear. Where information was provided, it was usually written. More than 25 percent of the occupants did not know what their responsibility was for damage to the housing unit. Forty-three percent stated they must pay for the damage, and 30 percent indicated they must repair damage. Ninety-four percent of the occupants stated that their installations had a method to identify and determine damages, and 96 percent of these respondents indicated that the method is

used and enforced. Similarly, almost 80 percent of the occupants indicated they knew what criteria must be met in order to check out of their quarters.

More than 60 percent of the occupants indicated they had purchased materials or tools for required SH projects. Only 11 percent of the respondents said the required materials and tools are always available at the SHSC when needed. More than 50 percent of the respondents stated that materials and tools were available most of the time. Almost 60 percent indicated the SHSC was open daily, and most respondents stated that the hours of operation corresponded closely to normal business hours (9:00 A.M. to 5:00 P.M.). However, 32 percent of the respondents felt the current hours of operation were not convenient and more than 50 percent indicated they would prefer more evening hours. More than 80 percent of the occupants stated that transportation was not available to the SHSC, and 65 percent of these respondents did not feel transportation should be available.

The questionnaires also provided information regarding the user's view of the SH Pamphlet (DA PAM 210-2).¹ Chapter 3 provides details about the data obtained.

Almost 25 percent of the respondents indicated the SH Program did not meet their needs in maintaining quality housing, mostly because supplies were not available at the SHSC when needed. More than 50 percent of the FH occupants felt they had more responsibility than if they were leasing from a civilian landlord. Eighty-one percent of the respondents had never requested permission to perform an unauthorized task; however, of those who had, 45 percent were granted permission to perform the requested work. Permission was denied most frequently for painting and next most often for carpentry tasks. More than 20 percent of the occupants felt they were required to perform tasks that should be done professionally. Of these, 78 percent indicated that they generally complete these tasks anyway. Grounds maintenance and plumbing were the most frequently cited examples of these tasks. (It was also noted that whether occupants liked working with their hands was negatively correlated to whether they thought they were required to perform tasks they felt should be done by a contractor.) An open-ended question seeking suggestions for changes in the SH Program produced a variety of responses, 19 percent of which were concerned with the supply of materials and tools at the SHSC.

DEH Questionnaires

Results of the 89 DEH questionnaires returned for analysis were very similar to those obtained from the occupant questionnaires, but with the following exceptions. While almost 90 percent of the occupants indicated their installations had some sort of recognition or award program for occupant participation, only 57 percent of the DEH personnel indicated that the installations had such a program. Similarly, only 23 percent of the DEH personnel indicated that programs existed for reward or recognition of DEH organizations.

Forty-two percent of the DEH personnel surveyed indicated that a letter regarding the SH Program was sent to FH occupants, while only 11 percent of the occupants indicated they had received a letter about the program. Similarly, the DEH personnel (45 percent) indicated that a pamphlet was also provided, whereas only 17 percent of the occupants said they had received such material.

¹DA PAM 210-2, *Handbook for Family Housing Occupants* (Department of the Army [DA], 15 September 1971).

For occupants who attempted to have SH tasks completed by PM teams, 96 percent of the DEH personnel indicated that occupants were told that the work should be done through SH, although only 25 percent of the occupants making such requests indicated they were instructed as such. DEH personnel were evenly divided regarding the possibility of participation being rank dependent. In addition, almost 40 percent of the DEH personnel indicated that participation in the SH Program was voluntary.

Eighty percent of the DEH personnel believed that FH occupants purchased the materials or tools required for SH tasks. When questioned about suggestions for improvements, about 55 percent indicated that training and availability of materials required improvement. Eighty-six percent of the DEH personnel indicated that the SH Program helped them maintain quality housing. Negative respondents felt that the main reason for failure in this area was because the occupants' work needed to be checked, with 63 percent indicating that rework was needed regularly. Despite these indicated shortcomings, almost 90 percent of the DEH personnel believed the SH Program was cost-effective. Fifty-eight percent of the DEH personnel stated they were satisfied with overall performance of SH tasks by FH occupants.

3 FAMILY HOUSING SELF-HELP GUIDANCE

Documentation concerning the SH Program is distributed primarily either to provide regulations for program implementation or to provide guidance for FH occupants. Available documentation evaluated for this study included Army regulations and other Department of Defense (DOD) directives, MACOM directives, and the *Handbook for Family Housing Occupants* (DA PAM 210-2). To evaluate the DA PAM 210-2 effectively, several commercial texts were also evaluated in depth. The following sections describe the methods used and the results obtained from the documentation analysis.

Description of Current Documentation

Army Documents

1. AR 420-22.² This document establishes the SH Program as a mandatory extension of the PM program. It outlines the responsibilities of the Chief of Engineers, MACOM and installation commanders, Facilities Engineers (FE), troop commanders, and occupants. It outlines PM tasks and the persons responsible for completing those tasks and also defines SH in terms of its goals and directives. Various documents are referenced as supplemental material for providing proper maintenance procedures.

Recommendations are also provided regarding what tasks should be required and those for which special authorization should be required. In general, the required tasks outlined are those that military personnel and FH occupants can realistically be expected to perform.

2. TB ENG 402.³ This document provides guidance for establishing installation SH Programs. It is a supplement to AR 420-22 and, as such, contains much greater detail than the AR. It begins by providing some general considerations and guidance about the program and then condenses maintenance and repair tasks into three broad categories: tasks requiring prior written approval, tasks which occupants generally can be expected to do, and tasks which the occupant should not do. Lists of specific tasks falling under each category are provided; however, these lists are not meant to be exhaustive. In addition, this document provides guidance on occupant responsibility for damaged, lost, or destroyed government property, utility conservation, and safety measures. It also provides guidance on development of the program, presentation of the program to occupants, instructional methods, supplies, equipment, and tools. Finally, brief, general descriptions of actual maintenance procedures are provided for several tasks.

MACOM Directives

1. TRADOC Regulation 420-5.⁴ This document describes the scope of both PM and SH. It also describes in-depth the responsibilities of both the various organizations in charge of the SH Program and the users.

²Army Regulation 420-22, *Preventive Maintenance and Self-Help Program* (DA, 6 July 1976).

³Technical Bulletin ENG 402, *Facilities Engineering Self-Help Program* (DA, 16 July 1970).

⁴TRADOC Regulation 420-5, *Preventive Maintenance and Self-Help* (U.S. Army Training and Doctrine Command, 11 June 1982).

This document thoroughly explains all aspects of the SH Program, including organization, staffing, and utilities conservation by housing occupants and troops. In addition, guidance is given for the training program and items to be kept in inventory. Finally, lists of authorized and unauthorized SH tasks are provided.

2. MDW Supplement to AR 420-22.⁵ This document outlines responsibilities of the personnel charged with implementing the SH Program and of the FH occupants. It states that certain improvements that go beyond the scope of SH can be made if approval is obtained from the Real Property Maintenance Manager (RPMM). This supplement states that the SHSC will supply materials and tools to help the occupants complete SH tasks. Finally, it provides lists of authorized and unauthorized work.

DA PAM 210-2

This document (*Handbook for Family Housing Occupants*) is guidance for FH occupants on the SH Program. It begins with a general introduction covering a broad range of topics, followed by information on furniture and furnishings. The remainder of the document is dedicated to providing moderately detailed instruction in the following areas: maintenance of quarters, utilities, appliances, maintenance of grounds, maintenance of paved and stabilized areas, utilities conservation, fire prevention and protection, garbage and refuse, pest control, and miscellaneous items.

Other DOD Directives

Documentation for Air Force and Navy SH Programs was also reviewed. However, the guidance provided was very general, and since the programs were of a much smaller scale and primarily voluntary at the individual level, the documentation was of limited use for this analysis.

Evaluation of Current Documentation

Army and MACOM Documentation

The Army documents provide information about regulations and general guidelines to the appropriate personnel, and the MACOM directives actually establish a program, and thus provide more specific and detailed information. Although the Army and MACOM documents have different intentions, this alone cannot explain the inconsistencies indicated in the comparison provided in Appendix B. This comparison shows that not only are there inconsistencies between the Army documents and the MACOM directives, but there are also inconsistencies within the categories themselves.

The different purposes of the two types of documentation lead to some difficulties. For example, because the directive provided in the Army documents is so general, it is difficult to attain correct or at least consistent interpretation of the scope of a SH Program. This leads to inconsistencies across installations in terms of scope and emphasis given to the program. Since the Army documentation (AR 420-22 and TB ENG 402) provides very little specific guidance, the installation command has a great deal of latitude in determining how different aspects of the program will be handled. This has allowed many different organizational structures to exist across installations when one organization may provide more effective, efficient program management.

⁵Supplement 1 to AR 420-22 (U.S. Army Military District of Washington).

The Fort Dix PAM 210-2⁶ is an example of the difficulties encountered due to lack of specific guidance in the Army documents. While this document provides a specific task list and outlines occupant responsibilities, it fails to include instructions and illustrations of the tasks the occupants are expected to perform. To obtain specific instructions for a given task, an occupant must look at Fort Dix PAM 420-1,⁷ which is of the same overall quality as DA PAM 210-2. Thus, lack of specific guidance creates the possibility of less effective and efficient operations.

In general, it is important to note that even though all of the documents subsequent to AR 420-22 comply with its basic intent, there is still a great deal of inconsistency.

DA PAM 210-2

DA PAM 210-2 was evaluated based on comparisons to commercially available maintenance and repair texts and on the opinions of FH occupants and DEH personnel. In addition, technical analyses were made regarding what tasks the occupants could reasonably be expected to perform.

Analysis of DA PAM 210-2 depended on determining an appropriate task list. The process used to determine the SH task list used in this evaluation (Appendix F) involved three analyses. First, task lists provided in the government documents listed in the previous section were reviewed. Commercial texts were then reviewed to set a basis for scope, quality of instruction, and illustration. Finally, the government documents were analyzed and compared to the commercial texts to produce a final task list against which all documents were evaluated.

Appendix C lists the commercial publications evaluated as well as the texts determined to be acceptable for comparison. Determination of whether a document was acceptable for further comparison was based on an analysis that rated the documents as "good," "fair," or "poor" for various task categories, such as housekeeping, carpentry, etc. (Appendix D). The analysis showed that the most useful commercial texts in terms of scope and quality of information provided are: *The Homeowner's Complete Manual of Repair & Improvement*, *Complete Guide to Home Repair, Maintenance, and Improvement*, and *Consumer Guide Fix-It*.⁸

Results of the evaluation indicate that DA PAM 210-2 is a good source of information for task areas related to housekeeping and safety, specifically maintenance of quarters (cleaning various surfaces), utilities conservation, fire protection and prevention, garbage and refuse, and pest control. Although these areas are explained clearly, they could be greatly enhanced by illustrations. Other sections of the pamphlet need extensive improvements as detailed below. From a technical standpoint, the document, which is the primary source document for occupant performance of SH tasks, is incomplete and inadequately written and illustrated.

Furniture and Furnishings. This section should include a broader scope of furniture care and maintenance, such as repair of small tears in upholstery, minor repair of

⁶Fort Dix PAM 210-2, *Installation Family Housing*.

⁷Fort Dix PAM 420-1, *Quarters Occupant Self-Help Program*.

⁸*The Homeowner's Complete Manual of Repair and Improvement*, Allen D. Bragdon, ed. (Arco Publishing, Inc. 1983); *Complete Guide to Home Repair, Maintenance, and Improvement* (Meredith Corporation, 1980); *Consumer Guide Fix-it* (Publications International, 1976).

furniture, and repair of furniture hardware. If bedroom furnishings are to be included with the home, special attention should be given to the cleaning and care of bedding. Instructions included in this section are adequate, but use of illustrations is highly recommended.

Maintenance of Quarters. This section merely lists the tasks the occupant is to do and provides very few instructions or illustrations. Instructions and illustrations for the tasks that are described--cleaning of blinds and shades, repairing holes in screens, and hanging pictures and mirrors on various wall materials--are fair.

Electrical. The task presentations in this section are of poor quality, both in instruction and illustration, and this deficiency could lead to serious occupant injury and damage to the property. Therefore this section should be rewritten very carefully and provide clear instructions and good illustrations. The text should include reasons why certain tasks need to be performed.

Plumbing. This section should be expanded to include certain critical tasks, such as shutting off critical valves, temporarily fixing a leaky pipe until a serviceman is available, and thawing a frozen pipe to prevent extensive expansion of pipes. Most of the tasks included in this section are vaguely described and poorly illustrated, and the occupant would need to have a good knowledge of the plumbing system to do these jobs successfully.

Gas. This task requires only the ability to detect a gas leak, notify the proper authority, and relight pilot lights for stoves, ovens, and heating equipment. This section needs more detailed illustration of the various items of equipment and their critical elements.

Heating, Ventilating, and Air Conditioning. This section emphasizes the economical use of utilities, including cleaning and replacing all filters, keeping the furnace area properly maintained, and cleaning and maintaining ventilation fans. While stress is placed on economy, not much has been done to describe this area in any depth. Illustration should be enhanced to include details of the areas requiring maintenance.

Appliances. This section is fairly well executed, although instructions and illustrations are vague.

Grounds and Maintenance. This section mainly lists the tasks that must be done. The instructions and illustrations provided are useful only for envisioning the final result.

Paved and Stabilized Areas. This section merely lists the tasks to be performed by the occupant. Instructions and illustrations should be included to provide adequate guidance for completing these tasks properly.

Security. A section should be included on security, which would provide guidance for installing surface-mounted locks to doors and windows. It should also provide information about protection from intrusions.

Tool Use. This section on proper tool use and safe handling procedures is not included but should be added.

User Evaluation

The results of the FH occupant questionnaire show general agreement that DA PAM 210-2 clearly and accurately tells what activities the occupant is expected to perform. The occupants also feel that the instructions are neither too simple nor too complex. The pamphlet illustrations are of acceptable quality, although there is uncertainty if there are too few of them. General information is felt to be complete, although the occupants would like other sources of information to be available. Only a small majority (58.6 percent) of occupants were supplied with information other than the DA PAM 210-2. In order of decreasing percentages, this included local information, safety directives, government publications, and commercial publications. Overall, the FH occupants are satisfied with DA PAM 210-2; however, it must be noted that of the 80 percent of the occupants given DA PAM 210-2, fewer than 40 percent of these people were required to read it.

Occupants were also asked to list other topics that would be useful if included in the DA PAM 210-2. The following were frequent responses: quarters maintenance responsibility and methods of quarters improvement would be useful information; basic housekeeping guidance and change of occupancy requirements are considered useful by a slight majority; and basic repairs and maintenance "how-to" reference information would be a valuable resource. Many occupants indicated that assistance from maintenance personnel would be helpful when attempting repair tasks; however, a discussion of the underlying philosophy of the SH Program was not felt to be necessary.

DEH Questionnaire results indicate that DEH personnel think DA PAM 210-2 clearly and accurately describes the work FH occupants are expected to perform. They consistently held favorable opinions about the document's quality. For additional help, most installation personnel report that *occupants are provided with other informational documents*. This conflicts with responses given by the FH occupants, but the reason for this apparent disparity could result from the sampling process used for questionnaire distribution.

Appendix E provides a more detailed comparison of the responses of DEH personnel and FH occupants.

4 COST/BENEFIT ANALYSES

The main purpose of a successful SH Program is to have FH occupants perform PM and minor repairs to FH units in order to save the government money and maintain housing quality. The assumption is that when the occupant performs these tasks, this labor will not have to be performed by FE personnel or contracted workmen and will represent a savings less the cost of administering the SH Program, training for the occupants, and warehousing of supplies. Work performed incorrectly that must be redone or work performed that causes additional damage and results in a more costly repair must also be considered a SH expense.

An analysis of SH costs versus avoided costs shows the benefits of a SH Program. Data were collected and analyzed from five installations: Fort Harrison, IN, Fort Hood, TX, Fort Campbell, KY, Fort Dix, NJ, and Fort Lee, VA. These installations were chosen as being representative of several different degrees of SH Program use. The data cover in-house, partially contracted, and fully contracted operations for the PM and SH Programs.

Fort Hood operates under a performance-type service maintenance contract for FH maintenance and repair, and Fort Campbell has part of its FH PM contracted. Fort Dix has an active SH Program, with all PM provided in-house.

To present an historical view of a functioning SH Program with no CA contracts, FH expenses were collected from Fort Harrison for several recent years. Since SH expenses are charged to FH accounts, these data include SH and PM expenditures. Table 1, which indicates Fort Harrison's FH expenditures, shows some interesting ratios derived from the cost data obtained. Although the SH Program at Fort Harrison is well run, its scope is not as comprehensive as the task analyses indicate can be reasonably expected of the average occupant. Nevertheless, SH activities account for more than one-fourth of the PM repairs and one-tenth of the total maintenance and repair.

Fort Hood Self-Help and Preventive Maintenance Programs

The Fort Hood SH and PM Programs were evaluated as examples of PM programs that are contractor-operated. Lists of all SOs, PM tasks for which the contractor was responsible, and items issued from the SH inventory were obtained for FY84.

Items determined to be SH tasks according to the expanded task list (see Chapter 3 and Appendix F) were extracted from the list of SOs filled by the contractor. For this new list, the approximate work time required by the contractor to complete each task was estimated, based on government averaged values for SH tasks. Using the Fort Hood contractor's wage rate of \$14.42/hour, the cost of completing each item was calculated. Summing every task cost, the total cost of performing the SH tasks was found to be \$521,449.03 (Appendix G). The estimated annual labor cost per unit when SH items were performed by the contractor rather than the occupant was \$99.59/unit, based on 5236 housing units.

Labor costs saved were also estimated from the list of SH items issued by developing an appropriate task to suit the item issued. The approximate time the contractor would have needed to complete this job was estimated. A total SH labor avoidance cost was then determined using the same procedure used for the SO list, and summing the cost of each task, based on a wage of \$14.42 per hour. This amount

Table 1

Fort Harrison Family Housing Expenses (1980-1983)

Fiscal Year	(Dollars in Thousands)				Sum
	1980	1981	1982	1983	
Maintenance/repair					
Service calls	80.7	97.7	86.9	83.9	349.2
Maintenance projects	168.6	104.5	221.2	191.9	686.2
Repair projects	139.1	102.0	152.1	522.9	916.1
Self-help	20.0	27.9	26.5	21.9	96.3
Total	408.4	332.1	486.7	820.6	2047.8
Exterior utilities	22.5	83.7	238.2	64.5	
Other real property					
Maintenance projects	17.4	49.7	100.4	131.9	
Alterations and additions					
Dwelling units	1.4	0.1	1.2	0.1	
Other real property	0.7	4.1	13.6	14.4	
Total	2.1	4.2	14.8	14.5	
Design costs M/R projects	0.0	0.0	11.0	35.5	
Total 1920 account	450.4	469.7	851.1	1067.0	2838.2

Self-Help Ratios	Percentages				Average (1980-1983)
Self-help/service calls	24.78	28.56	30.49	26.10	27.58
Self-help/maintenance	11.86	26.70	11.98	11.41	14.03
Self-help/service and maintenance	8.02	13.80	8.60	7.94	9.30

represents the labor value of the SH tasks performed by the occupants if these tasks had been performed by the contractor.

Since Fort Hood has no record of PM tasks actually completed by the contractor, an analysis conducted by the Army Audit Agency (AAA) was used to provide data unavailable from the installation. The analysis showed SH tasks to be 29.15 percent of the PM tasks at Fort Hood. Thus, about 30 percent of the contract PM labor costs incurred were for tasks that should have been performed by SH. To determine this cost more precisely, total PM labor cost was calculated. At the time the analysis was conducted, the contractor performed PM on every dwelling four times a year. The contractor received a fixed rate of \$21 for each dwelling, regardless of the time spent. The total cost was calculated by multiplying the wage per dwelling by the number of dwellings and multiplying this amount by the number of PM visits. This number was then multiplied by 0.3 to obtain the SH labor cost based on analysis of PM tasks. Table 2 presents results of the three cost analyses.

A total labor cost was determined for Fort Hood by summing the costs per unit from each analysis. This number represents the labor costs that would have been saved if SH had been used for all tasks that would reasonably be within the occupants' capabilities.

Fort Campbell Self-Help and Preventive Maintenance Programs

A list of all SOs filed in FY83 was collected from Fort Campbell, and all tasks on this list identified as SH items according to the expanded task list were compiled. Fort

Table 2

Self-Help Labor Costs

Basis of Estimate	Total Labor Cost	Cost per Unit
Service orders	\$521,449.03	\$ 99.59
Self-help inventory	\$167,920.89	\$ 32.07
Preventive maintenance	<u>\$131,947.20</u>	<u>\$ 25.20</u>
Total	\$821,317.12	\$156.86

Campbell provided data for the required labor effort needed to complete each task. At an hourly wage of \$15.94 per hour, the estimated total cost for 1983 came to \$257,781.68 (Appendix H). For the 4154 housing units at Fort Campbell, the cost when SH tasks were performed by the contractor rather than by the occupants was calculated to be \$62.06 per unit.

Table 3 provides a comparison of labor costs that could be saved through use of a SH Program. These data are based on analysis of SOs at Forts Hood and Campbell.

Fort Dix Self-Help Program

The cost analyses for Forts Hood and Campbell were based on costs incurred by having PM personnel perform SH tasks. The Fort Dix evaluation approached the analysis from a different perspective. Instead of examining the costs incurred, the labor costs avoided by having FH occupants perform SH tasks were determined.

Appropriate tasks were developed for each SH item. The labor effort estimates required to complete these tasks were based on time estimates from previous cost analyses. Based on information provided by Fort Dix, a wage rate of \$11.86 per hour was applied to the estimates. Costs were then calculated by multiplying the number of times each task occurred by the estimated time required to complete the task and the wage rate. Tasks were then grouped by category, such as plumbing or carpentry, and the individual costs summed within each category. The category costs were then summed to obtain a total cost of \$491,670.12 (Appendix I). Based on 2310 housing units, this was a labor cost savings of \$212.84 per unit.

Fort Lee Self-Help Program

To establish a basis for evaluating the Fort Dix results, another installation without a CA contract (Fort Lee, VA) was chosen for analysis.

Appropriate tasks were developed to suit SH inventory items issued in the 8-month period from 1 October 1984 to 23 May 1985. The approximate time a workman would have needed to complete the tasks was estimated based on average times developed from Fort Hood and Fort Campbell data. An estimate of the cost per task was calculated using a wage of \$16.69 per hour, and multiplying it by the number of times a given task occurred and the estimated time required to complete the task. Summing these costs gave an SH labor cost avoidance of \$310,474.76 for the 8-month period analyzed. To

Table 3
Summary Chart of Self-Help Labor Costs

Description	Installation	
	Fort Hood	Fort Campbell
Self-help in SOs	\$521,449.03	\$257,781.68
No. of units	5236	4154
SH cost in SOs per unit	\$99.59	\$62.06

Table 4
Summary Chart of Self-Help Labor Costs

Description	Installation	
	Fort Lee	Fort Dix
No. of units	1461	2310
Self-help inventory labor per unit	\$318.76	\$212.84
Administrative cost	\$50.20 (est.)	\$31.75 (actual)
Net cost avoidance	\$268.56	\$181.09

extend this figure to a full year, the data were extrapolated, resulting in a figure of \$465,712.14. The cost avoidance per unit per year, determined by dividing the total cost per year by 1461 (the total number of housing units at the installation) was \$318.76.

Administrative Costs of a Self-Help Program

An important economic consideration of any program is the cost involved in administering it so that the net savings potential can be estimated. Administrative costs obtained from Fort Dix for analysis (Appendix I) were found to be \$73,334.43, or \$31.75 per unit. Subtracting this value from the SH labor cost savings of \$212.84 per unit, gave a net savings per unit of \$181.09, as illustrated in Table 4. For comparison, an estimated cost for administering the SH Program at Fort Lee was also developed using the data, and the resulting net cost avoidance calculated for Fort Dix. Using this analysis, it was possible to construct the comparison provided in Table 4.

Based on this analysis, it is possible to assert that the savings potential of the SH Program outweighs the costs of administering it.

5 CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Operations and Management

Questionnaire results have shown that the SH Program has been well accepted by most of the FH occupants and DEH personnel surveyed. Following are specific findings.

1. More than 95 percent of the FH occupants indicated that the SH Program in general should either remain at the present level or be expanded.
2. Ninety-six percent of the FH occupants and 92 percent of the DEH personnel indicated that site-specific programs at their installations should remain the same or be expanded (Appendix A).
3. Eighty-six percent of the DEH respondents indicated that the SH Program helped DEH maintain quality housing.

With this level of acceptance, it is possible to effectively upgrade and fortify the SH Program. Improving the SH Program may improve the retention rate of Army enlisted personnel. Survey results indicated that 15 percent of the FH occupants were undecided regarding their decision to make the Army their career; improved housing conditions may provide an incentive that helps those who are undecided.

To benefit all FH occupants, improvements are needed in several areas of the SH Program:

1. Supply of materials and tools
2. Awareness and content of training
3. Distinction between SH and PM
4. SH Program image
5. Incentives.

FH occupants have indicated willingness to purchase supplies or materials from commercial sources to comply with the SH Program. Since supplies and materials are supposed to be furnished as part of the program, a more effective method of controlling inventory levels is needed within the SHSC.

FH occupants and DEH both agree that training must be improved. Analysis of the data has shown a significant relationship between occupant education level and whether they believe the training provided is too simple. It appears that the occupants with either a college or a graduate degree found the training too simple, so some care needs to be taken in determining the level of instruction. Also, improvements should be made not only in actual training, but also in making occupants aware of the training program. This is indicated by the fact that 93 percent of the DEH personnel but only 75 percent of the occupants indicated that training is available. Part of this problem may be due to what appears to be a lack of communication between occupants and the DEH. This is obvious

when examining responses to questions regarding the type of information supplied to occupants versus the information DEH personnel indicate they provide (Appendix A).

Another area requiring improvement is the relationship between SH and PM. While occupants are aware of the difference between these two functions, it seems there is still a large amount of overlap. Sixty-nine percent of the occupants and 62 percent of the DEH personnel indicated that a PM team would complete a SH task upon the occupant's request. To alleviate the workload of the PM shop, greater emphasis must be placed on ensuring the distinction between SH and PM is maintained and tasks are completed accordingly. Site visits indicate that organizations which administered the SH Program through the PM Branch of the Buildings and Grounds Division have the best control. Thus, it may be possible to ensure the distinction between SH and PM by encouraging management of the SH Program within the PM Branch.

Further analysis has also shown that whether occupants enjoy working with their hands has a significant negative correlation to whether they believe they are required to complete tasks they feel should be done by others. Therefore, to encourage participation by all occupants, projecting an image of the SH Program as one that is both easy to comply with and educational would be beneficial. It should also be emphasized that this program will be of great benefit to the occupant.

The area most needing improvement is the area of incentives. Although most respondents agreed that a reward or recognition program would improve participation, there appeared to be disagreement over whether such a program existed. Therefore, it may be very beneficial to implement new recognition programs or embellish existing ones. Implementing a recognition program for outstanding support or program improvement by the DEH within the different MACOMs may also prove to be very beneficial.

Documentation and Guidance

Analysis of Army and MACOM documents shows that these documents must be more specific and consistent. AR 420-22 requires the SH Program to be mandatory and offers guidelines regarding which tasks should be performed by the FH occupant. The other documents analyzed complied with the basic intent of AR 420-22, but were inconsistent with respect to occupant responsibilities and quality of information.

Review of DA PAM 210-2 showed that the handbook contains some very useful information about housekeeping and safety, but needs revision with regard to scope, quality of instruction, and quality of illustration. In comparison to other government documents, DA PAM 210-2 corresponds well with respect to noting which tasks the occupant should do. However, in comparison to the other commercial texts reviewed, the quality of DA PAM 210-2 clearly needs improvement in scope and quality of instruction and illustration. However, the commercial texts do not cover all of the specified SH tasks.

Both FH occupants and DEH personnel are satisfied with DA PAM 210-2, but feel that other sources of information should be provided. These results conflict with those from the technical review of the document, possibly because less than 40 percent of the respondents given the pamphlet were required to read it (Appendix A).

Lack of specificity and homogeneity among the pertinent government documents can be alleviated by revising these documents. The recommendations will concern standardizing the program so as to provide continuity for FH occupants who must

transfer to new installations. This standardization can be started by replacing task lists in current documentation with the suggested task list provided in Appendix F. The inadequacies of DA PAM 210-2 can be resolved by expanding its scope and improving its quality. The revised edition should conform to the suggested task list (Appendix F) and be of a quality similar to that of the three commercial texts suggested as additional references (Appendix C).

Cost-Effectiveness

Analysis of data from several installations shows that a significant cost avoidance is possible by conducting a comprehensive FH SH Program. Although SH tasks being performed by SO vary among installations, the cost analysis sampling showed that \$62.06 to \$99.59 per housing unit can be avoided in annual service maintenance--a significant percentage of the total cost for service maintenance. For example, service maintenance costs for 5236 quarters at Fort Hood during FY83 were \$2,820,290--for a cost per housing unit of \$538.63. Thus, there is a potential 18 percent saving ($99.59/538.63$) available to Fort Hood from an effectively run SH Program. Similarly, the Fort Dix analysis indicates that a comprehensive SH Program can avoid up to \$180 in service maintenance costs per housing unit annually. Since this figure is substantially larger than that shown by installations with wholly or partially contracted programs, it appears that organizations that emphasize SH show a substantial cost benefit.

Recommendations

Based on results of the data analysis, the following recommendations are made for improving the SH Program.

Organizational Structure

1. The FH SH Program should be placed in a part of the DEH organization where the necessary skills and knowledge are available. Ideally, it should be incorporated with the PM Branch operational structure as a separate shop or as part of a shop dedicated to FH.

2. The SHSC and training site should be located together or within walking distance of each other and in a convenient location for access by the FH occupants. All SH activities and personnel should be located in one area.

3. A feedback mechanism, such as housing area "mayors," should be established to gather comments and suggestions for improvements.

4. Troop and FH SH operations should be tracked in separate accounts.

5. Incentive programs should be established to promote the benefits of a strong SH Program.

Operational Procedures

1. In addition to the required training course, individualized instruction for specific tasks should be provided at the SHSC for FH residents upon request.

2. A list of installation-approved SH tasks should be provided for the SO work receptionists.

3. SHSC schedules should include weekend and evening hours.

Training

1. Required occupant training courses should include hands-on training, demonstrations, handouts, and issuance of Army publications.
2. Representatives from the Housing Division, Fire and Safety, and other DEH shops should participate in the training.
3. Personnel being trained should be evaluated at the end of each training session.
4. If Cable TV is available, consideration should be given to developing a video training course. A detailed approach to be used in developing this program will be determined during implementation of the test plan.
5. Spouses of service members should be encouraged to attend the SH training class.

Documentation and Guidance

DA PAM 210-2 should be completely rewritten to include adequate descriptions and illustrations of all tasks identified to be within the scope of the FH SH Program.

The following books and pamphlets should be included in a reference library located at the SHSC.

1. *The Homeowner's Complete Manual of Repair & Improvement*, Ed. Allen D. Bragdon, Arco Publishing, Inc., New York, NY, 1983.
2. *Complete Guide to Home Repair, Maintenance, and Improvement*, Better Homes and Gardens, Meredith Corporation, Des Moines, IA, 1980.
3. *Consumer Guide Fix-It*, Publications International, Skokie, IL, 1976.

Field Evaluation

The recommendations given above should be field-tested at one or more installations. Test results should be documented and used to develop recommended revisions to existing Army documentation.

LIST OF ACRONYMS

AAA	Army Audit Agency
AR	Army Regulation
CA	Commercial Activities
CONUS	Continental United States
DA	Department of the Army
DEH	Directorate of Engineering and Housing
DOD	Department of Defense
ER	Engineering Regulation
FE	Facility Engineer
FEJE	Facility Engineer Job Entry
FESS	Facility Engineers Supply System
FH	Family Housing
GAO	General Accounting Office
IFS	Integrated Facilities System
L&E	Labor and Equipment Card
MACOM	Major Command
MESB	Management Engineering Systems Branch
PAM	Pamphlet
PM	Preventive Maintenance
QA	Quality Assurance
RPM	Real Property Maintenance Manager
SH	Self-Help
SHIP	Self-Help Issue Point
SHSC	Self-Help Service Center
SO	Service Order
SOO	Standard Operations Order
STANFINS	Standard Army Finance System
TB	Technical Bulletin
TRADOC	Training and Doctrine Command
USA-CERL	U.S. Army Construction Engineering Research Laboratory

APPENDIX A:

COMPILED QUESTIONNAIRES

SELF-HELP QUESTIONNAIRE FOR FAMILY HOUSING OCCUPANTS

This questionnaire is designed to assist the Army Family Housing Office in evaluating the self-help program. Please ensure that the senior service member completes this questionnaire. A high completion rate from family housing occupants will help to improve the self-help program. Please mail the questionnaire in the enclosed envelope within one week of receipt.

1. How long have you lived in your present quarters? (Please check one.)

<u>39.1</u>	(1)	Less than 1 Year
<u>32.8</u>	(2)	1-2 Years
<u>16.4</u>	(3)	2-3 Years
<u>11.7</u>	(4)	3+ Years

2. Have you ever owned a home?

<u>34.0</u>	(1)	Yes
<u>66.0</u>	(0)	No

3. Do you enjoy doing repairs/working with your hands:

<u>48.4</u>	(1)	Yes
<u>8.2</u>	(0)	No
<u>43.5</u>	(3)	Sometimes

4. Why do you live in family housing? (Please check all that apply.)

<u>34.3</u>	(1)	Military community benefits
<u>6.3</u>	(2)	Physical characteristics
<u>60.4</u>	(3)	Economics
<u>62.5</u>	(4)	Convenience
<u>18.6</u>	(5)	Required
<u>6.4</u>	(6)	Other (specify) _____

5. How old were you on your last birthday?

Age 19 - 54

6. What is your formal education? (Please check one.)

<u>.9</u>	(1)	Some high school
<u>22.8</u>	(2)	Completed high school
<u>7.1</u>	(3)	GED
<u>4.8</u>	(4)	Vocational/Technical
<u>44.4</u>	(5)	Some college
<u>20.0</u>	(6)	Completed college
	(7)	Graduate degree

7. What is your rank? (Please check one.)

<u>9.1</u>	(1)	E1 - E4
<u>65.2</u>	(2)	E5 - E9
<u>5.2</u>	(3)	WO
<u>12.6</u>	(4)	O1 - O3
<u>7.9</u>	(5)	O4 +

8. Do you plan on making the Army your career?

<u>77.2</u>	(1)	Yes
<u>7.3</u>	(0)	No
<u>15.5</u>	(3)	Not certain

SCOPE OF SELF-HELP PROGRAM

9. Does this installation have a self-help program?

99.5 (1) Yes -- Go to Question 10
5 (0) No

9a. (If no) Do you think a self help-program should be established at this installation?

71.4 (1) Yes -- Go to Question 11
28.6 (0) No -- Go to Question 11

Read instructions
 Above
 Question 11

10. Is the program at this installation more extensive, less extensive, or about the same as other installations?

14.0 (1) More extensive
17.3 (2) Less extensive
45.5 (3) About the same
23.3 (4) Did not participate

IF THERE IS A SELF-HELP PROGRAM AT THIS INSTALLATION, PLEASE COMPLETE THIS QUESTIONNAIRE.

IF THERE IS NOT A SELF-HELP PROGRAM AT THIS INSTALLATION, PLEASE ANSWER QUESTIONS 11, 12, 13b, 14 and Question 48.

11. Are you familiar with the self-help program at other installations?

61.2 (1) Yes
38.8 (0) No

12. Do you know the difference between occupant self-help and Directorate of Engineering and Housing preventive maintenance?

83.2 (1) Yes
16.8 (0) No

13. What are your overall impressions of the self-help program at this installation and in general?

13a. At This Installation
 (Please check one.)

61.7 (1) Program should be expanded
34.5 (2) Program should remain the same
2.1 (3) Program should be decreased
1.7 (4) Program should be terminated

13b. In General
 (Please check one.)

67.0 (1) Program should be expanded
30.1 (2) Program should remain the same
1.4 (3) Program should be decreased
1.7 (4) Program should be terminated

14. Which of the following are goals of the self-help program? Please circle "yes" or "no" for each statement.

	<u>YES</u>	<u>NO</u>
14a. To save army housing money	1 90.9	0 9.1
14b. To increase quality of housing	1 82.1	0 17.9
14c. To instill pride of residency	1 84.4	0 15.6

PROGRAM PARTICIPATION

15. Do you participate in the self-help program?

91.4 (1) Yes -- Go to Question 16
8.6 (0) No

15a. (If no) Why not?

54.1 (1) Don't have time
12.8 (2) Don't understand program
11.0 (3) Don't have necessary skills
32.1 (4) Self-help tasks are accomplished otherwise

EVEN IF YOU DO NOT PARTICIPATE IN THE SELF-HELP PROGRAM, PLEASE COMPLETE THIS QUESTIONNAIRE AS IT WILL ASSIST THE ARMY HOUSING OFFICE EVALUATE AND IMPROVE THE PROGRAM.

16. Who in your household performs the self-help tasks? Please circle "yes" or "no" for each of the following.

		<u>YES</u>	<u>NO</u>
16a. Service member	91.3	1	0
16b. Spouse	<u>70.4</u>	1	0
16c. Dependent	13.0	1	0
16d. Non-family member	2.7	1	0

16e. If no one performs self-help tasks in your household, please check below and go to Question 18.

.6 No one performs self-help tasks.

17. Approximately how often do you (or someone in your household) perform self-help tasks? Please circle daily, weekly, monthly, less frequently or never for each task listed.

TASKS	<u>Daily</u>	<u>Weekly</u>	<u>Monthly</u>	<u>Less Frequently</u>	<u>Never</u>
Painting	1 .1	2 .4	3 2.0	4 36.4	5 61.0
Carpentry	1 .2	2 1.2	3 8.3	4 36.5	5 53.9
Hardware	1 .7	2 4.3	3 25.0	4 43.7	5 26.3
Electrical	1 .1	2 1.2	3 6.8	4 30.4	5 61.5
Plumbing	1 .5	2 2.5	3 15.0	4 45.4	5 36.6
Yard	117.8	267.7	3 9.4	4 3.4	5 1.6

18. Does this installation encourage self-help participation?

89.4 (1) Yes
10.6 (0) No
 (8) Don't know

19. Does this installation have some kind of award or recognition program for outstanding quarters?

89.2 (1) Yes
10.8 (0) No
 (8) Don't know

20. Do you think that recognition encourages program participation?

73.0 (1) Yes
27.0 (0) No
 (8) Don't know

21. How does your participation here compare with your participation at previous installations?

15.1 (1) Participate more
12.4 (2) Participate less
34.9 (3) Participate about the same
3.8 (4) Do not participate here
33.9 (5) Did not participate at previous installations

KNOWLEDGE OF THE PROGRAM

22. How was information on the self-help program provided to you?

10.7 (1) Letter
17.2 (2) Pamphlet
67.5 (3) In-processing presentation
3.8 (4) Other - Please specify - _____
3.3 (5) No information provided
10.4 (6) Class

23. Do you know what type of self-help work is allowed?

84.1 (1) Yes
15.9 (0) No

24. Do you know where to obtain supplies?

98.3 (1) Yes
1.7 (0) No

25. Is some form of I.D. required to obtain supplies?

92.6 (1) Yes
7.4 (0) No

26. Do you know where to get self-help questions answered?

91.0 (1) Yes
9.0 (0) No

27. If you decide not to perform a routine self-help project will a preventive maintenance team accomplish the task upon your request?

69.1 (1) Yes
30.7 (0) No
.2 (8) Don't know

28. Have you ever been told by the Preventive Maintenance Team or Directorate of Engineering and Housing Service Desk that your request should be done by self-help?

25.0 (1) Yes
48.2 (0) No -- Go to Question 29
26.8 (3) Never made request -- Go to Question 29

28a. (If yes) What type of task did the preventive maintenance team or Directorate of Engineering and Housing Service Desk tell you to accomplish through self-help?

Type of task _____

ACCESSIBILITY OF TRAINING

29. Is self-help training provided at this installation?

75.6 (1) Yes
24.4 (0) No -- Go to Question 34

29a. (If yes) Was training available immediately upon your arrival or is training scheduled on a periodic basis?

59.4 (1) Trained upon arrival
40.6 (2) Training available on periodic basis

30. Were you tested after you completed training?

16.2 (1) Yes
83.8 (0) No

31. Are you required to complete training before you can use supplies?

79.0 (1) Yes
21.0 (0) No

32. Is training available to all family members?

86.1 (1) Yes
13.9 (0) No -- Go to Question 33
 (8) Don't know

32a. (If yes) Is the training scheduled at a convenient time and place for family members to attend?

80.9 (1) Yes
19.1 (0) No

33. Would you say that the training is adequate?

72.4 (1) Yes -- Go to Question 34
27.6 (0) No

33a. (If no) Why not? Was training: (Check all that apply.)

75.6 (1) Too brief
39.8 (2) Too simple
6.9 (3) Too detailed
8.5 (4) Too complicated

OCCUPANT RESPONSIBILITY

34. Were you provided training and/or written guidance on your housing responsibilities? (Check one.)

7.3 (1) Training
45.9 (2) Written guidance
39.3 (3) Both were provided
7.5 (4) Neither one were provided

35. Were you provided training and/or written guidance specifying the difference between damage and normal wear and tear? (Check one.)

6.2 (1) Training
31.8 (2) Written guidance
23.1 (3) Both were provided
39.0 (4) Neither one were provided

36. What is your responsibility for damage?

30.3 (1) Must repair
43.3 (2) Must pay
.8 (3) None
25.6 (8) Don't know

37. Does this installation have a method to identify and determine damages?

94.0 (1) Yes
6.0 (0) No -- Go to Question 38
 (8) Don't know

37a. (If yes) Is this method used and enforced?

96.5 (1) Yes
3.5 (0) No
 (8) Don't know

38. Do you know what criteria must be met to check out of your quarters?

79.4 (1) Yes
20.6 (0) No

PROGRAM SUPPORT

39. Have you purchased materials or tools for required self-help projects from a commercial store?

62.6 (1) Yes
37.4 (0) No

40. Are the required materials and tools available at the Self-Help Service Center when needed all of the time, most of the time, occasionally, infrequently or never? (PLEASE CHECK ONE)

11.8 (1) All of the time
54.4 (2) Most of the time
23.8 (3) Occasionally
7.9 (4) Infrequently
2.1 (5) Never

41. When is the Self-Help Service Center open?

59.6 (1) Daily
39.2 (2) Several days a week
1.1 (3) Once a week
.1 (4) Less often than once a week
_____ (5) Don't know

41a. What hours is the Self-Help Service Center open?

41b. Are the Self-Help Service Center hours convenient?

68.3 (1) Yes -- Go to Question 42
31.7 (0) No

41c. (If no) What hours would be the most convenient for you?

42. Is transportation to the Self-Help Service Center available?

16.6 (1) Yes -- Go to Question 43
83.4 (0) No

42a. (If no) Do you think transportation should be available?

35.3 (1) Yes
64.7 (0) No

SELF-HELP PAMPHLET

43. Were you provided the Handbook for Family Housing Occupants (DA PAM 210-2) upon arrival at this installation?

80.7 (1) Yes
19.3 (0) No

44. Were you provided information other than the DA PAM 210-2 pamphlet?

58.6 (1) Yes
41.4 (0) No

44a. (If yes) Please specify the type of information?

IF YOU WERE NOT GIVEN THE DA PAM 210-2 SELF-HELP PAMPHLET,
GO TO QUESTION 48.

45. Does the DA PAM 210-2 pamphlet clearly and accurately tell you what activities you are expected to perform?

89.7 (1) Yes
10.3 (0) No

46. Was reading the pamphlet a required part of your training?

38.1 (1) Yes
45.9 (0) No
16.0 (3) Did not receive training

47. Listed below are some statements that may describe your impressions of the self-help pamphlet. Please circle whether you agree, disagree or have no opinion on each of the following statements (a through h):

	Agree	Disagree	No Opinion
a. Instructions are too simple	1 17.0	2 49.0	3 34.1
b. Instructions are too complex	1 6.6	2 62.2	3 32.1
c. Illustrations are poor	1 17.1	2 52.1	3 30.8
d. Not enough illustrations	1 28.3	2 39.7	3 32.0
e. Information is outdated	1 26.4	2 41.7	3 31.9
f. Information is incomplete	1 24.7	2 43.3	3 32.0
g. Other sources of help should be listed.	1 56.0	2 18.1	3 25.9
h. Satisfied with pamphlet	1 53.1	2 19.1	3 27.8

48. Which of the following types of information would you find most useful in a self-help pamphlet? (Please check all that you would find useful.)

29.1 (01) The underlying philosophy of self-help
79.3 (02) Occupant responsibility for maintaining quarters
69.3 (03) Improving occupant's quarters
70.5 (04) Sources of maintenance assistance
39.8 (05) Basic housekeeping guidance
62.4 (06) Change of occupancy requirements
81.1 (07) Basic repairs/Maintenance (How-to)
5.8 (08) Other (Please specify) _____

EVALUATION OF THE PROGRAM

49. Does the program meet your needs in maintaining quality housing?

75.8 (1) Yes -- Go to Question 50
24.2 (0) No

49a. (If no) How does it fail? _____

Please turn the page.

50. Compared to leasing from a civilian owner, do you feel that your level of responsibility is higher, about the same, or lower. (Check one.)

53.1 (1) Higher
35.8 (2) About the same
11.1 (3) Lower
 (8) Don't know

51. Have you ever requested permission to perform an unauthorized task?

18.8 (1) Yes
81.2 (0) No - Go to Question 52

- 51a. (If yes) Were you given the permission to perform the task?

45.4 (1) Yes - Go to Question 52
54.6 (0) No

- 51b. (If no) Please list the tasks that you were not given the permission to perform.

52. Are you currently required to perform some tasks that you feel should be done by others?

22.0 (1) Yes
78.0 (0) No -- Go to Question 53

- 52a. (If yes) Do you generally complete these tasks anyway?

79.8 (1) Yes
20.2 (0) No

- 52b. Please list some of the tasks that you feel should be done by others.

53. What changes, if any, would you suggest in the self-help program?

PLEASE RETURN THE QUESTIONNAIRE IN THE STAMPED, SELF-ADDRESSED ENVELOPE TO:

University of Pittsburgh
University Center for Social and Urban Research
4200 Fifth Avenue
Pittsburgh, Pa. 15213-9972

THANK YOU FOR TAKING THE TIME TO HELP US WITH THIS SURVEY.

SELF-HELP QUESTIONNAIRE FOR DIRECTORATE OF ENGINEERING AND HOUSING

This questionnaire is designed to assist the Army Family Housing Office in evaluating the self-help program. A high completion rate from Directorate of Engineering and Housing personnel will help to improve the self-help program. Please mail the questionnaire in the attached envelope within one week of receipt.

1. Would you say that the scope or level of the self-help program at this installation has increased, decreased or remained the same over the last three years?

<u>73.9</u>	(1)	Increased
<u>9.1</u>	(2)	Decreased
<u>15.9</u>	(3)	Remained the same
<u>1.1</u>	(4)	No Program - Go to Question 49 on the last page

2. Do you think that a self-help program is beneficial?

<u>92.0</u>	(1)	Yes
<u>8.0</u>	(0)	No

3. What are your overall impressions of the self-help program at this installation? (Please check one.)

<u>62.7</u>	(1)	Program should be expanded
<u>30.1</u>	(2)	Program should remain the same
<u>2.4</u>	(3)	Program should be decreased
<u>4.8</u>	(4)	Program should be terminated

4. Which of the following are goals of the self-help program? Please circle "1" for yes or "0" for no.

	<u>Yes</u>	<u>No</u>
a. To save army housing money	76.1 1	0 23.9
b. To increase quality of housing	75.0 1	0 25.0
c. To instill pride of residency	83.0 1	0 17.0

KNOWLEDGE OF THE PROGRAM

5. How do you provide information on the self-help program? (Check all that apply).

<u>42.0</u>	(1)	Letter
<u>45.5</u>	(2)	Pamphlet
<u>70.5</u>	(3)	In-processing information
<u>10.2</u>	(4)	Other (specify) _____
<u>2.3</u>	(5)	No information provided
<u>25.0</u>	(6)	Info from classes

6. Do you tell occupants where to get self-help questions answered?

<u>98.9</u>	(1)	Yes
<u> </u>	(0)	No

7. Are occupants given written information specifying the type of self-help work that is permitted?

93.0 (1) Yes
7.0 (0) No

8. Is the difference between occupant self-help and Directorate of Engineering and Housing preventive maintenance made clear to occupants?

90.6 (1) Yes
9.4 (0) No

9. Are the hours and location of the self-help service center prominently displayed and published?

93.1 (1) Yes
6.9 (0) No

10. Is some form of I.D. required to obtain supplies?

97.7 (1) Yes
2.3 (0) No

11. If routine self-help work is not done, will a preventive maintenance team perform the task?

62.4 (1) Yes
37.6 (0) No

12. Does the Preventive Maintenance Team or Directorate of Engineering and Housing Service Desk ever tell a Family Housing occupant that requested work should be done thru self-help?

96.6 (1) Yes
3.4 (0) No

OCCUPANT RESPONSIBILITY

13. Do you provide training and/or written guidance on occupant responsibilities? (Please check one)

25.0 (1) Training
17.0 (2) Written guidance
53.4 (3) Both were provided
4.5 (4) Neither one were provided

14. Do you provide training and/or written guidance to occupants specifying the difference between damages and normal wear and tear?

25.0 (1) Training
22.6 (2) Written guidance
31.0 (3) Both were provided
21.4 (4) Neither one were provided

15. What is the occupant's responsibility for damage? (Please check one)

11.8 (1) Occupant must repair
63.5 (2) Occupant must pay
1.2 (3) Occupant has no responsibility
23.5 (4) Occupant must pay and repair

16. Does this installation have a method to identify and determine damages?

96.5 (1) Yes -- Go Question 17
3.5 (0) No

- 16a. (If no) Why not? _____

17. Are Family Housing occupants informed of the criteria that must be met to clear quarters?

98.9 (1) Yes
1.1 (0) No

PROGRAM PARTICIPATION

18. Does this installation emphasize self-help participation?

93.1 (1) Yes
6.9 (0) No

19. Do the majority of Family Housing occupants participate in the self-help program?

85.1 (1) Yes -- Go to Question 20
14.9 (0) No

- 19a. (If no) Why not?
-

20. What is the level of participation in the self-help program? Please circle "1" for yes or "0" for no for each of the following statements.

	<u>Yes</u>	<u>No</u>
a. Participants do what is required	68.6 1	0 31.4
b. Participants do less than required	40.7 1	0 59.3
c. Participants do extra allowable work	36.0 1	0 64.0
d. Participants do non-authorized work	25.6 1	0 74.4
e. Participants do unacceptable work	34.9 1	0 65.1

21. Does this installation give some kind of award or recognition to occupants for outstanding quarters?

57.6 (1) Yes
42.4 (0) No

22. Is the Directorate of Engineering and Housing given any kind of awards or recognition for outstanding quarters?

23.1 (1) Yes
76.9 (0) No

23. Do you think that recognition encourages program participation?

81.8 (1) Yes
18.2 (0) No
 (8) Don't know

24. Does rank make a difference in participation level?

50.0 (1) Yes
50.0 (0) No -- Go to Question 25
 (8) Don't know

- 24a. (If yes) Please check which of the following ranks has a low participation level? (Check all that apply)

34.3 (1) E1-E4
11.4 (2) E5-E9
17.1 (3) WO
22.9 (4) O1-O3
25.8 (5) O4+

25. Is participation in the self-help program voluntary?

36.8 (1) Yes
63.2 (0) No

ACCESSIBILITY OF TRAINING

26. Is Family Housing training provided to occupants?

93.1 (1) Yes
6.9 (0) No -- Go to Question 27

26a. (If yes) Was training provided to occupants immediately upon their arrival or is training scheduled on a periodic basis?

54.8 (1) Immediately Upon Arrival
45.2 (2) Training Scheduled on Periodic Basis

27. Are occupants tested after they complete training?

12.2 (1) Yes
87.8 (0) No

28. Are occupants required to complete training before they are permitted to use supplies?

67.1 (1) Yes
32.9 (0) No

29. Is training made available to all family members?

77.0 (1) Yes
23.0 (0) No -- Go to Question 30

29a. (If yes) Is the training scheduled at a convenient time and place for family members to attend?

95.4 (1) Yes
4.6 (0) No

30. Would you say that all, most, some or none of the Family Housing occupants attend training? (Please check one)

14.1 (1) All
56.5 (2) Most
20.0 (3) Some
9.4 (4) None
_____ (8) Don't know

PROGRAM SUPPORT

31. Do occupants ever purchase materials or tools for required self-help tasks from a commercial store?

30.4 (1) Yes
19.6 (0) No
_____ (8) Don't Know

32. When is the self-help service center open?

74.7 (1) Daily
24.3 (2) Several days per week
_____ (3) Once a week
_____ (4) Less often than once a week
_____ (8) Don't know

32a. What hours is the self-service center open?

_____ Hours

33. Is transportation to the self-help service center available?

13.6 (1) Yes -- Go to Question 34
86.4 (0) No

33a. (If no) Would transportation improve program participation?

26.3 (1) Yes
73.7 (0) No
_____ (8) Don't know

SELF-HELP PAMPHLET

34. Do you provide the Handbook for Family Housing Occupants (DA PAM 210-2) to Family Housing occupants upon their arrival at this installation?

91.7 (1) Yes
8.3 (0) No

35. Do you provide information other than the DA PAM 210-2 pamphlet to Family Housing occupants?

83.1 (1) Yes
16.9 (0) No -- GO TO QUESTION 36 IF YOU PROVIDED
DA PAM 210-2 TO OCCUPANTS.

35a. (If yes) What other type of information do you provide? (Please specify)

GO TO QUESTION 39 IF YOU DID NOT PROVIDE DA PAM 210-2 TO FAMILY HOUSING OCCUPANTS.

36. Do you require Family Housing occupants to read the DA PAM 210-2 as part of their training?

51.4 (1) Yes
48.6 (0) No

37. Does the self-help pamphlet clearly and accurately delineate what Family Housing occupants are expected to perform?

81.1 (1) Yes
18.9 (0) No

38. Listed below are some statements that may describe your impression of the self-help pamphlet. Please circle whether you agree, disagree or have no opinion on each of the following statements (a thru h).

	<u>AGREE</u>	<u>DISAGREE</u>	<u>NO OPINION</u>
a. Instructions are too simple	1 14.7	2 63.2	3 22.1
b. Instructions are too complex	1 3.1	2 72.3	3 24.6
c. Illustrations are poor	1 13.6	2 59.1	3 27.3
d. Not enough illustrations	1 38.1	2 42.9	3 19.0
e. Information is outdated	1 31.8	2 54.5	3 13.6
f. Information is incomplete	1 34.4	2 56.3	3 9.4
g. Other sources of help should be listed	1 47.6	2 27.0	3 25.4
h. Satisfied with pamphlet	1 62.5	2 29.2	3 8.3

39. Which of the following types of information would you find most useful in a self-help pamphlet? (Please check all that you would find useful).

42.9 (01) The Underlying Philosophy of Self-Help
89.3 (02) Occupant Responsibility For Maintaining Quarters
58.3 (03) Improving Occupant's Quarters
70.2 (04) Sources of Maintenance Assistance
67.9 (05) Basic Housekeeping Guidance
65.5 (06) Change of Occupancy Requirements
79.8 (07) Basic Repairs/Maintenance (How-to)
10.7 (08) Other (Please specify) _____

EVALUATION OF THE PROGRAM

40. Does the self-help program aid the Directorate of Engineering and Housing in the maintenance of quality housing?

86.2 (1) Yes -- GO TO QUESTION 41
13.8 (0) No

- 40a. (If no) Why does the program fail?
-

41. Which of the following would you like to see improved in the program? Please check each area that you feel should be improved.

55.2 (1) Training
43.7 (2) Scope of work allowed
55.2 (3) Availability of materials
13.8 (4) Self-help service center open more hours
10.3 (5) Transportation to service center
41.4 (6) Incentive or recognition awards
33.3 (7) Increased funding
6.9 (8) No change needed

42. Does the Directorate of Engineering and Housing have a program to measure the effectiveness of the self-help program?

37.0 (1) Yes
63.0 (0) No
_____ (8) Don't know

43. Is the self-help program cost effective?

37.9 (1) Yes
12.1 (0) No
_____ (8) Don't know

44. Are there any available cost records or work performance records to support a cost-effective evaluation?

58.1 (1) Yes
41.9 (0) No
_____ (8) Don't know

45. Are you satisfied with the overall performance of self-help tasks by Family Housing occupants?

58.8 (1) Yes
41.2 (0) No

- 46a. Is rework ever required?

63.3 (1) Yes
36.7 (0) No -- Go to Question 47

- 46b. (If yes) About what % of rework?

_____ Percentage

- 46c. (If yes) Was any rework outside the scope of self-help?

50.0 (1) Yes
50.0 (0) No -- Go to Question 47

- 46d. (If yes) What % of work is outside the scope of rework?

_____ Percentage

47. Do you think the majority of Family Housing occupants support the program?

75.3 (1) Yes
24.7 (0) No

48. What changes if any, would you suggest in the self-help program?

49. RESPONDENT INFORMATION

Name

Position

Office Symbol

Telephone: Commercial

 AUTOVON OR FTS

PLEASE RETURN THE QUESTIONNAIRE IN THE STAMPED, SELF-ADDRESSED ENVELOPE TO:

University of Pittsburgh
University Center for Social and Urban Research
4200 Fifth Avenue
Pittsburgh, PA 15213-9972

THANK YOU FOR TAKING THE TIME TO HELP US WITH THIS SURVEY.

APPENDIX B:

COMPARISON OF GOVERNMENT DOCUMENTS

LEGEND

R: Required
A: Allowed by permission
X: Prohibited

Documents Evaluated

- a. AR 420-22
- b. MDW Supplement to AR 420-22
- c. TB ENG 402
- d. USAREUR
- e. TRADOC REG 420-5
- f. Compilation of a,b,c,d, and e
- g. USA-CERL

Task Description	Documents						
	a	b	c	d	e	f	g
<u>Housekeeping</u>							
Clean and polish wood furnishings							R
Clean upholstery							R
Clean floorings, walls, ceilings		R	R	R		R	R
Clean lighting fixtures							R
Clean small appliances		R	R		R	R	R
Clean and defrost refrigerator		R	R		R	R	R
Clean electric range			R		R	R	R
Clean gas range			R	R	R	R	R
Clean and unjam garbage disposal			R			R	R
Clean exterior of dishwasher			R		R	R	R
<u>Carpentry</u>							
Minor repair of wood fences	A		R	R	R	R	R
Reset finishing nails		R	R	R	R	R	R
Refasten coathooks, clothes poles		R	R	R	R	R	R
Tighten/replace builder's hardware	R	R	R	R	R	R	R
Lubricate locks and hardware		R	R		R	R	R
Replace door stops					R	R	R
Replace caulking around doors/windows			R	R		R	R
Repair small holes in dr/wndw screens	R	R	R	R	R	R	R
Remove, clean & store dr/wndw screens			R			R	R
Rpr/rpl blinds, shades and brackets		R	R	R	R	R	R
Install/rpl curtain rod & accessories			R	R		R	R
Hang pictures and mirrors			A			A	R
Replace clothesline	R	R	R	R		R	R
Replace broken glass			R		R	R	A

Task Description	Documents						
	a	b	c	d	e	f	g
<u>Carpentry (cont'd)</u>							
Adjust kitchen/bathroom hardware					R	R	R
Repair tile floors and walls							R
Repair drawers							R
Patch small holes in wallboard/plaster							R
Install fencing, patios, shelves	A			A	A	A	A
Unjam windows				R		R	R
Minor furniture repair							R
Use of tools							R
<u>Painting</u>							
Spot painting		R		R	R	R	R
Paint interior and exterior			A	A		A	A
<u>Electrical</u>							
Replace broken globes & lamps	R	R	R	R	R	R	R
Replace flourescent lamps & starters				R		R	R
Rpl blown fuses, reset circuit bkr	R	R	R	R	R	R	R
Rpl cracked/broken switch/rept plates			R		R	R	R
Rpr/rpl cords and plugs		R	R			R	R
Minor servicing of lighting fixtures							R
Minor servicing of small appliances		R	R			R	X
<u>Plumbing</u>							
Know how to shut off critical valves							R
Unclog drains and toilets		R	R	R	R	R	R
Rpr/rpl faucet washers & handles	R	R	R	R	R	R	R
Rpr/rpl shower heads					R	R	R
Correct running toilet-flush/float ball				R		R	R
Caulk around tub and tile			R		R	R	R
Tighten/replace toilet seat							R
Thaw frozen pipes				R		R	R
Perform first aid for leaky pipes							R
Dismantle trap to unclog				R		R	R
Repair drains and traps			R			R	X
Winterize plumbing							R
Drain sediment from hot water heaters			R		R	R	R
Install insulating blankets on wtr htr					R	R	X
Clean/maintain pressure & temp valves			R			R	X
Bleed radiator							R
<u>Gas</u>							
Identify & report suspected gas leaks							R
Relight pilot lights			R			R	R

Task Description	Documents						
	a	b	c	d	e	f	g
<u>HVAC</u>							
Clean and replace all filters	R		R		R	R	R
Maintain furnace area			R			R	R
Lubricate heating equipment			R			R	R
Clean/lubricate ventilation fan				R		R	R
Conserve utilities		R	R	R		R	R
Weather strip				R		R	R
<u>Appliances</u>							
Clean/replace filters-kitchen exhaust			R		R	R	R
Clothes washer-keep level, clean fltr					R	R	R
Clothes dryer-keep level, clean fltr					R	R	R
<u>Grounds Maintenance</u>							
Water, mow edge seed, fertilize lawns		R	R	R	R	R	R
Sod small areas, control weeds		R	A			A	A
Minor pruning of trees, shrubs, vines		R	R		R	R	R
Replace/plant trees and shrubs	A		A	A	A	A	A
Clean & maintain yard		R	R	R	R	R	R
Maintain splashblocks		R	R		R	R	R
Hose down exterior walls of quarters			R			R	R
Clean gutters and downspouts							R
<u>Paved & Stabilized Areas</u>							
Clean walks, patios, steps, & platforms			R	R		R	R
Clean oil & grease from pavement			R			R	R
Rake gravel			R			R	R
Fill ruts and eroded areas			R			R	R
Remove snow and ice		R	R	R	R	R	R
<u>Pest Control</u>	R	R	R	R	R	R	R
<u>Trash and Refuse Disposal</u>			R			R	R
<u>Security</u>							
Inst surf mntd locks on door/windows							R
<u>Fire Protection</u>							
Install smoke detectors							R
Know protection procedures				R		R	R

APPENDIX C:

DA PAM 210-2--BASES FOR COMPARISON

1. AR 420-22
2. MDW Supplement to AR 420-22
3. TB ENG 402
4. USAREUR 420-1
5. USDA, Inside (Navy)
6. TRADOC REG 420-5
7. *Complete Guide to Home Repair, Maintenance, and Improvement* (Better Homes and Gardens)
8. *Homeowner's Complete Manual of Repair and Improvement* (Bragdon)
9. *Complete Manual of Home Repair and Improvement* (Popular Mechanics)
10. *Home Maintenance* (William Weiss)
11. *Home Repairs Made Easy* (Dick Damske)
12. *More First Aid For The Ailing House* (Roger C. Whitman)
13. *Do-It-Yourself-But-Do-It-Right Home Repair Hints*
14. *The New, New York Times Complete Manual To Home Repair* (Gladstone)
15. *Consumer Guide Fix-It*
16. *The Feminine Fix-It Handbook* (Kaye B. Ward)
17. *Home Improvement, Home Repair* (Richard V. Nunn)

Useful Commercial Texts

1. *Homeowner's Complete Manual of Repair and Improvement*
Reason: Contained more than three-quarters of required task areas.
Quality was good.
2. *Complete Guide to Home Repair, Maintenance, and Improvement*
Reason: Contained more than half of the required task areas.
Quality was good.
3. *Consumer Guide Fix-It*
Reason: Contained more than half of the required task areas.
Quality was good.
4. *Home Improvement, Home Repair*
Reason: Contained more than half of required task areas.
Quality was fair.
5. *The Feminine Fix-It Handbook*
Reason: Contained more than half of required task areas.
Quality was fair.

Rejected Commercial Texts

1. *Complete Manual Of Home Repair And Improvement*
Reason: Covered only about half of all tasks required.
Quality of those areas was fair.

2. *Home Maintenance*
Reason: Contained less than half of the task areas.
Quality of areas was fair.
3. *Home Repairs Made Easy*
Reason: Contained less than half of the required task areas.
Quality was fair.
4. *More First Aid For The Ailing House*
Reason: Contained less than half of the required tasks.
Quality was fair.
5. *Do-It-Yourself-But-Do-It-Right Home Repair Hints*
Reason: Contained around half of the required tasks.
Quality was fair.
6. *The New, New York Times Complete Manual To Home Repair*
Reason: Contained less than half of the required tasks.
Quality was fair.

APPENDIX D:

DA PAM 210-2 AND COMMERCIAL PUBLICATIONS

LEGEND

Task Category

% USA-CERL Tasks (+ >75%; * >50%; - <50%)
Overall Quality (+ good; * fair; - poor)

Publications

- a. DA PAM 210-2
- b. *Complete Guide to Home Repair, Maintenance, and Improvement*
- c. *Homeowner's Complete Manual of Repair and Improvement*
- d. *Complete Manual of Home Repair and Improvement*
- e. *Home Maintenance*
- f. *Home Repairs Made Easy*
- g. *More First Aid For The Ailing House*
- h. *Do-It-Yourself-But-Do-It-Right Home Repair Hints*
- i. *The New, New York Times Complete Manual To Home Repair*
- j. *Consumer Guide Fix-It*
- k. *The Feminine Fix-It Handbook*
- l. *Home Improvement, Home Repair*

Task Category	Publications											
	a	b	c	d	e	f	g	h	i	j	k	l
1. Housekeeping	+		-	-			-	-	-	-	-	-
	*		+	+			*	+	*	+	*	-
2. Carpentry	-	+	+	+	-	*	-	-	*	*	*	-
	*	+	+	*	*	+	*	*	*	+	*	*
3. Electrical	+	*	+	-	+	+		+	-	*	*	+
	*	+	+	*	+	+		*	+	+	*	+
4. Plumbing	-	+	+	-	*	*		*	-	-	-	*
	*	+	+	*	*	+		*	*	+	*	+
5. Gas	+	+	*					*		*		+
	-	+	+					*		+		*
6. HVAC	*	+	-	-	-	-		-	-	-	-	*
	-	+	+	*	*	+		*	*	+	*	-
7. Appliances	+						-					*
	*						*					-
8. Grounds maint.	-		-	*			-			-		-
	-		+	+			+			+		*
9. Paved/stblzd srf	-			-								
	*			+								
10. Pest control	+		+								+	
	+		+								+	
11. Trash and refuse	+											
12. Security		+	+							+		
		+	+							+		
13. Fire prot/ prev.	*	*	*								*	
	+	+	+								*	

APPENDIX E:

DOCUMENTATION-RELATED QUESTIONNAIRE RESULTS

Topic: Self-Help Pamphlet

		<u>Occupant</u>		<u>DEH</u>	
		Yes %	No %	Yes %	No %
Provided with the DA PAM 210-2?		80.7	19.3	91.7	8.3
Provided with other information?		58.6	41.4	83.1	16.9
Type of information:	Local	68.8%		69.2%	
	Safety Directives	4.2%		11.5%	
	Govt. Publication	4.8%		13.5%	
	Commercial	3.6%		0.0%	
	Non Specified	15.8%		5.8%	
	Other	2.8%		0.0%	

If given the DA PAM 210-2:

DA PAM 210-2 clearly and accurately tells what activities are expected to be performed?	89.7	10.3	81.1	18.9
Reading the pamphlet was required as part of training?	38.1	45.9	51.4	48.6
No training received?	16.0		N/A	

Impressions of the DA PAM 210-2

	<u>Agree</u>		<u>Disagree</u>		<u>No Opinion</u>	
	Occ.	DEH	Occ.	DEH	Occ.	DEH
Instructions too simple	17.0	14.7	49.0	63.2	34.1	22.1
Instructions too complex	6.6	3.1	62.2	72.3	31.2	24.6
Illustrations are poor	17.1	13.6	52.1	59.1	30.8	27.3
Not enough illustrations	28.3	38.1	39.7	42.9	32.0	19.0
Information is outdated	26.4	31.8	41.7	54.5	31.9	13.6
Information is incomplete	24.7	34.4	43.3	56.3	32.0	9.4
Other sources of help should be listed	56.0	47.6	18.1	27.0	25.9	25.4
Satisfied with pamphlet	53.1	62.5	19.1	29.2	27.8	8.3

Information which would be useful in the DA PAM 210-2

Information	Agree %	Disagree %	Respondent
Underlying philosophy of SH	29.1 42.9	70.9 57.1	Occupant DEH
Occupant responsibility for maintaining quarters	79.3 89.3	20.7 10.7	Occupant DEH
Improving occupant quarters	69.3 58.3	30.7 41.7	Occupant DEH
Sources of maintenance assistance	70.5 70.2	29.5 29.8	Occupant DEH
Basic housekeeping guidance	39.8 67.9	60.2 32.1	Occupant DEH
Change of occupancy requirements	62.4 65.5	37.6 34.5	Occupant DEH
Basic repairs/maintenance (how-to)	81.1 79.8	18.9 20.4	Occupant DEH

APPENDIX F:

RECOMMENDED TASKS, SUPPLY INVENTORY, STOCKAGE LEVELS, AND EQUIPMENT

RECOMMENDED TASK LIST

The following list of self-help tasks that should be reasonably expected to be performed by family housing occupants has been extracted from Army guidance, compiled, and then evaluated by people with varying levels of technical experience in these types of work. Each task is followed by a letter code as follows: R = mandatory; A = allowed by special permission; G = government-supplied material; O = occupant-supplied material; P = permanent, remains upon evacuation; T = temporary, remove upon evacuation; DX = direct exchange item.

Self-Help Tasks	Req'd	All'd
<u>Housekeeping</u>		
1. Clean & polish wood furnishings and woodwork	RO	
2. Clean upholstery and draperies	RO	
3. Clean floors, walls, ceilings, and accessible windows	RO	
4. Clean lighting fixtures (wash globes and lens covers, clean out bugs)	RO	
5. Clean small appliances	RO	
6. Clean and defrost refrigerator	RO	
7. Clean electric range (keep free of grease and food drippings)	RO	
8. Clean gas range	RO	
9. Clean and unjam garbage disposal	RO	
10. Clean exterior of dishwasher	RO	
<u>Carpentry</u>		
11. Minor repair of wood fences & exterior storage (repair damaged rails, shore up loose posts, lift sagging gates)	RG	
12. Reset finishing nails	RG	
13. Refasten coathooks, clothes poles, closet shelves	RG	
14. Tighten/replace builder's hardware	RG	DX
15. Lubricate locks and hardware	RG	
16. Replace door stops	RG	DX
17. Replace caulking around doors and windows	RG	
18. Repair small holes in door and window screens	RG	
19. Remove/rehang, clean, and store door screens and window screens	RG	
20. Repair/replace window shades and brackets	RG	DX
21. Replace curtain rod and accessories	RG	DX
22. Hang pictures and mirrors	RG	
23. Replace clothesline	RG	DX
24. Replace/adjust kitchen and bathroom hardware (install/tighten paper holders, soap dishes...)	RG	DX

Self-Help Tasks	Req'd	All'd
<u>Carpentry (cont'd)</u>		
25. Adjust drawers (sand or lubricate sticking edges)	RG	
26. Patch small holes in wallboard or plaster	RG	
27. Install patio fencing... Install shelves...		AGP AOT
28. Unjam windows (unstick windows due to dried paint or dirt)	RG	
29. Minor furniture repair (glue loose joints, tighten hardware)	RG	
30. Replace storm door closer and crash chain	RG DX	
31. Repair screen doors	RG	
32. Replace mail box	RG DX	
33. Replace mechanical door chime	RG DX	
34. Repair kitchen cabinets	RG	
35. Replace house numbers	RG DX	
<u>Painting</u>		
36. Spot painting	RG	
<u>Electrical</u>		
37. Replace broken globes	RG DX	
38. Replace fluorescent lamps and starters	RG DX	
39. Replace blown fuses, reset tripped circuit breakers	RG DX	
40. Replace cracked/broken switch and receptacle plates.	RG DX	
<u>Plumbing</u>		
41. Know how to shut off critical valves	RG	
42. Unclog drains and toilets	RG	
43. Repair leaky faucets, replace faucet handles	RG DX	
44. Repair/replace shower heads	RG DX	
45. Tighten/replace toilet seat	RG DX	
46. Replace tank lid	RG DX	
47. Correct running toilet (flush ball, float ball)	RG	
48. Adjust water level in toilet tank	RG	
49. Replace lift wires	RG DX	
50. Replace trip lever	RG DX	
51. Replace lift wire guide	RG DX	
52. Replace stopper and strainer	RG DX	
53. Replace and clean faucet aerator	RG DX	
54. Caulk around tub and tile	RG	
55. Perform first aid for leaky pipes	RO	
56. Dismantle trap to unclog	RG	
57. Install insulating blankets on hot water heater		AG
58. Bleed radiator	RG	

Self-Help Tasks	Req'd	All'd
<u>Gas</u>		
59. Identify and report suspected gas leaks	RO	
60. Relight pilot lights	RO	
<u>HVAC</u>		
61. Clean and replace air filters	RG	
62. Maintain furnace area (keep area free of debris and clutter)	RO	
63. Lubricate heating equipment	RG	
64. Clean/lubricate identified components of ventilation system	RG	
65. Remove radiator covers to clean convectors	RG	
66. Conserve utilities	RO	
67. Install/replace weatherstripping	RG	
<u>Appliances</u>		
68. Clean/replace filters in kitchen exhaust	RG DX	
69. Replace light bulbs in appliances	RG DX	
<u>Grounds Maintenance</u>		
70. Water, mow, edge, seed, fertilize, and rake lawns	RG	
71. Perform minor pruning of trees, shrubs, and vines	RG	
72. Replace/plant trees and shrubs		AGP
73. Clean and maintain yard	RG	
74. Maintain splash blocks (keep in proper position under downspout)	RG DX	
75. Clean gutters and downspouts/replace downspouts	RG DX	
76. Fill ruts and eroded areas	RG	
<u>Paved and Stabilized Areas</u>		
77. Clean walks, patios, steps, and platforms	RG	
78. Clean oil and grease from pavement	RO	
79. Rake gravel	RG	
80. Remove snow and ice	RG	
<u>Pest Control</u>		
81. Keep all food areas clean	RO	
82. Keep trash containers clean and tightly covered	RO	
83. Keep screens in good repair	RG	
84. Store wool goods in mothproof containers	RO	
85. Use mouse, roach traps safely and properly	RG	
86. Use authorized pesticides carefully and properly		AG

Self-Help Tasks**Req'd****All'd**Trash and Refuse Disposal

- 87. Place all refuse in refuse containers
- 88. Wrap all wet, odorous garbage
- 89. Maintain cans, covers, and collection points
- 90. Keep access to refuse containers clear

RO
RO
RO
RO

Security

- 91. Install surface-mounted locks on doors and windows

RG

Fire Protection

- 92. Replace batteries for smoke detectors where applicable
- 93. Know protection procedures

RG DX
RG

Miscellaneous

- 94. Move or store heavy articles

RG

RECOMMENDED SUPPLY INVENTORY AND STOCKAGE LEVELS

Item	Recommended Inventory Level (Per 100 Households)	Unit of Measure*	Quantity
<u>Carpentry</u>			
DX Clothesline**	.81	hk	—
DX Sash cord	1.52	hk	—
DX Towel bar	.21	ea	—
DX Toilet paper roller and holder	.43	ea	—
DX Door stop	1.98	ea	—
DX Door stop bumper	1.73	ea	—
DX Cabinet catch	5.19	ea	—
Barrel bolt	.68	ea	—
DX Cabinet hinge	1.15	ea	—
DX Storm door closer	.64	ea	—
Hinged hasp	.39	ea	—
Hook & eye	.49	ea	—
DX Concave door knob	2.47	ea	—
DX Cabinet pull	2.00	ea	—
Door saver	.61	ea	—
Spackling compound	5.10	cn	—
DX Door bell	.61	ea	—
DX Window shades	8.66	ea	—
DX Mailbox	1.22	ea	—
DX Soap holder	.23	ea	—
DX Shower curtain rod	.04	ea	—
DX Handrail bracket	.08	ea	—
Wood filler	.98	cn	—
DX Door spring	.08	ea	—
Masking tape	.68	ro	—
DX Window handle	.18	ea	—
DX Building numbers	2 total	set	—
Steel wool	.05	pk	—
Window latch	.05	ea	—
Machine screws		bx	— ass't.
Wood screws		bx	— ass't.
Silicon spray	.60	cn	—
Flat washers	1.00	ea	—
Locking washers	1.00	ea	—
Screen patch kits	.12	ea	—
Nails		50 lb box	— ass't.
Sandpaper	10.00	sht	—
Carpenter's glue	2.00	btl	—
DX Curtain rods	2.00	ea	—
DX Smoke detector batteries	.60	ea	—

*Hk = hank; ea = each; cn = carton; ro = roll; pk = pack; bx = box; sht = sheet;
btl = bottle; gl = gallon; tb = tube.

**DX = direct exchange.

Item	Recommended Inventory Level (Per 100 Households)	Unit of Measure	Quantity
<u>Painting</u>			
Paint	3.54	gl	—
Plastic sheet	2.10	ro	—
Paint brush	1.08	ea	—
<u>Electrical</u>			
DX Adapter	.14	ea	—
DX Receptacle/switch plate	8.66	ea	—
DX Glass globe	2.92	ea	—
Ceiling fixture nut	.44	ea	—
Felt washer	2.16	ea	—
Electrical tape	2.00	ro	—
DX Starters	.90	ea	—
DX Fuses	.50	ea	—
<u>Plumbing</u>			
DX Aerator (faucet)	.73	ea	—
DX Faucet handle	.17	ea	—
Faucet washer	.09	ea	—
DX Basin/drain stopper	1.38	ea	—
DX Hose & sprayer	.51	ea	—
DX Basket strainer	1.01	ea	—
DX Showerhead	.93	ea	—
DX Float ball	.21	ea	—
DX Flush tank ball	.36	ea	—
DX Lift wire guide	.09	ea	—
DX Tank lever	.30	ea	—
DX Lift wire	.24	ea	—
DX Lower lift wire	.29	ea	—
DX Float rod	.11	ea	—
DX Tank flapper	.19	ea	—
DX Toilet seat	.81	ea	—
DX Tank lid	.094	ea	—
Force cup	.82	ea	—
Tub sealer	7.59	tb	—
Putty knife	2.10	ea	—
Caulking	.47	tb	—
Insulating blankets	.20	ea	—
<u>HVAC</u>			
Heating/AC filter***	21.65	ea	—
Duct tape***	129.87	ro	—
Weatherstripping	1.37	ea	—
Lubricating oil	1.70	cn	—
DX Heat register	.24	ea	—

***The recommended stockage levels for these items are seasonal levels and should be maintained during the appropriate seasons.

Item	Recommended Inventory Level (Per 100 Households)	Unit of Measure	Quantity
<u>Appliances</u>			
DX Exhaust hood filter	1.02	ea	—
DX Appliance lamp	2.04	ea	—
DX Burner bowl	.188	ea	—
<u>Paved and Stabilized Areas</u>			
Ice melting compound	site specific	lb	tbd‡
<u>Pest Control</u>			
Mouse traps	10.00	ea	—
Roach traps	37.40	ea	—
Rat traps	2.50	ea	—
Insecticide (aerosol)	10.00	12 oz. can	—
<u>Security</u>			
Bathroom lock	.595	ea	—
Passage lock	.047	ea	—
Sash lock (surface mount)	1.37	ea	—
Deadbolt lock	.379	ea	—
Security chain	.379	ea	—
Latch	.455	ea	—
Lock set	.10	ea	—
<u>Grounds and Maintenance</u>			
Grass seed	tbd	bag	tbd
Fertilizer	1.00	10 L	—
DX Rain spout	.01	ea	—
DX Splashblock	.01	ea	—
Black dirt	.20	ton	—
Gravel	.20	ton	—

‡tbd = to be determined.

RECOMMENDED EQUIPMENT LIST

Item	(Per 100 Households) Quantity
Wet vacuum cleaner	tbd*
1/4-in. Electric drill with bits	tbd
12-in. Hand drill	tbd
Hacksaw and blades	tbd
Wood chisels	tbd
24-in. Crowbar	tbd
Hammers (ball peen, carpenter's, sledge, tack)	tbd
Hatchet	tbd
Pliers (7-in. needle nose, side cutting, slide lock, 6-in. slip joint)	tbd
Wrenches	tbd
Ear protectors	tbd
Screwdrivers (flat-tip, phillips)	tbd
Knives (utility, putty)	tbd
5-in. Drywall knife	tbd
Goggles	tbd
50-ft Extension cord	tbd
6-ft Wood ladder	tbd
Saws (bow, pruning, crosscut)	tbd
Carpenter level	tbd
Toilet plunger	tbd
Lawn rake	tbd
Garden hoe	tbd
Hedge shears	tbd
Grass shears	tbd
Garden nozzle	tbd
Garden hose	tbd
Weed cutter	tbd
Garden rake	tbd
Lawnmower	tbd
Pruning shears	tbd
Fertilizer spreader	tbd
Lawn edger	tbd
Push broom	tbd
Shovel	tbd
Handsprayer (insecticide)	tbd
Furniture dollie	tbd

*tbd = to be determined

APPENDIX G:**FORT HOOD FY84 SERVICE ORDERS**

The following is an analysis of the FY84 service orders performed on 5236 family housing units. Only those tasks previously identified as being appropriate for inclusion in a Self-Help Program are shown. A wage rate of \$14.42/hour has been used for all tasks in accordance with information obtained from Fort Hood.

Task Description	No. of Occurrences	Estimated Repair Time	Cost
1. Repair/repl door hdwe	1310	1	\$18,890.20
2. Patch screen door	829	1	11,954.18
3. Patch window screen	322	1	4,643.24
4. Repr/repl curtain rod	3086	1	44,500.12
5. Repr/repl bath acc	489	1	7,051.38
6. Repair ceramic tile	76	2	2,191.84
7. Reset/repl splash blocks	49	1	706.58
8. Repr/repl clothesline	602	1	8,680.84
9. Repair privacy fence	260	3	11,247.60
10. Replace window/door screen	1514	2	43,663.76
11. Replace weatherstripping	140	1	2,018.80
12. Light pilot on furnace/htr	380	1	5,479.60
13. Replace heat lamp in bath	8	1	115.36
14. Remove drain obstruction	5268	1	75,964.56
15. Repr/repl faucet	5821	1	83,938.82
16. Unjam garbage disposal	858	2	24,744.72
17. Unclog kitchen sink	560	1	8,075.20
18. Unclog commode	1764	1	25,436.88
19. Unclog lavatory	250	1	3,605.00
20. Light pilot on water htr	366	1	5,277.72
21. Repr/repl light fixture	2725	2	78,589.00
22. Repl fluorescent/deco lamp	572	1	8,248.24
23. Repl wall receptacle plate	101	1	1,456.42
24. Repl wall switch plate	32	1	461.44
25. Reset circuit breaker	289	1	4,167.38
26. Repr/repl smoke detectors	394	1	5,681.48
27. Light pilot on range/oven	325	1	4,686.50
28. Repair door	1725	1	24,867.29
29. Repair built-in furnishings	144	2	4,152.96
30. Unclog gutter & downspout	22	3	951.72

Total cost = \$521,449.03

APPENDIX H:**FORT CAMPBELL FY83 SERVICE ORDERS**

Task Description	Hours Used	Cost/Task
1. Inst toilet ppr holder	189	3,012.66
2. Inst/rpl/rpr towel rack	1305	20,801.70
3. Rpl/rpr shower curtain rod	96	1,530.24
4. Inst venetian blinds/new	127	2,024.38
5. Rpr/resec venetian blinds	857	13,660.58
6. Rpl cabinet hardware	22	350.68
7. Inst WDDR lock/cyl	367	5,849.98
8. Rpr/rpl lock/cyl/wwd	2747	43,787.18
9. Unstop sink/commode	120	1,912.80
10. Rpl bib washer/faucet	621	9,898.74
11. Rpl commode seat	185	2,948.90
12. Patch ceiling holes	3651	58,196.94
13. Rpr door knobs	63	1,004.22
14. Inst/rpl float ball/st	1030	16,418.20
15. Inst night chain	44	701.36
16. Rpr/rpl flush valve	198	3,156.12
17. Inst dr/weather stripping	216	3,443.04
18. Resecure wood handrail	324	5,164.56
19. Rpr/rpl mailbox	144	2,295.36
20. Rpl shower head	24	382.56
21. Rpr/reinst window screen	2169	34,573.86
22. Rpr screen in window	55	876.70
23. Ease windows	806	12,847.64
24. Recaulk 2 windows	159	2,534.46
25. Rpl 3x5 window glass	419	6,678.86
26. Inst window handle/lock	202	3,219.88
27. Install mirror	10	159.40
28. Renail cabinet	5	79.70
29. Renail stair step	17	270.98

Total cost = \$257,781.68

APPENDIX I:**FORT DIX COST AVOIDANCE**

Task Area	Cost Saved (\$)
Housekeeping	0.00
Carpentry	181,837.52
Painting	25,570.16
Electrical	17,315.60
Plumbing	95,899.96
HVAC	73,259.22
Appliances	10,333.02
Grounds & maintenance	12,524.16
Paved & stabilized areas	23.72
Pest control	61,173.88
Trash & refuse	0.00
Security	13,732.88
Total	491,670.12
Cost avoidance based on inventory labor per housing unit	
For 2310 housing units	\$212.84
Administrative Costs Saved(\$)	
Labor	63,945.68
Equipment (mostly vehicle)	9,388.75
Total	73,334.43
Administrative cost per housing unit	31.75
Net cost avoidance per housing unit	181.09

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ATTN: DAEN-ECC
ATTN: DAEN-ECE
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USA Japan (USARJ)
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ATTN: DEH-Honshu 96343
ATTN: DEH-Okinawa 96331

416th Engineer Command 60623
ATTN: Facilities Engineer

US Military Academy 10966
ATTN: Facilities Engineer
ATTN: Dept of Geography & Computer Science
ATTN: DSCPER/NAEN-A

AMMRC, ATTN: DRXNR-WE 02172

USA ARRCOM 61299
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ATTN: DRSAR-IS

AMC - Dir., Inst., & Servc
ATTN: DEH (23)

DLA ATTN: DLA-WI 22314

DNA ATTN: NADS 20305

FORSCOM
FORSCOM Engr, ATTN: AFEN-DEH
ATTN: DEH (23)

HSC
ATTN: HSLO-F 78234
ATTN: Facilities Engineer
Fitzsimons AMC 80240
Walter Reed AMC 20012

INSCOM - Ch, Instl. Div
ATTN: Facilities Engineer (3)

ROK/US Combined Forces Command 96301
ATTN: EUSA-HHC-CFC/Engr
MDW, ATTN: DEH (3)

MTMC
ATTN: MTMC-SA 20315
ATTN: Facilities Engineer (3)

NARADCOM, ATTN: DRDNA-F 01760

TARCOM, Fac. Div. 48090

TRADOC
HQ, TRADOC, ATTN: ATEN-DEH
ATTN: DEH (19)

TSARCOM, ATTN: STSAS-F 63120

USACC, ATTN: Facilities Engr (2)

WESTCOM
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ATTN: APEN-IN

SHAPE 09055
ATTN: Surv. Section, CCB-OPS
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